DOI:
10.1016/j.jcorpfin.2016.11.001

Document Version
Peer reviewed version

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PII: S0929-1199(16)30251-6
DOI: doi: 10.1016/j.jcorpfin.2016.11.001
Reference: CORFIN 1114

To appear in: *Journal of Corporate Finance*

Received date: 19 May 2016
Revised date: 28 October 2016
Accepted date: 1 November 2016

Please cite this article as: McGuinness, Paul B., Vieito, João Paulo, Wang, Mingzhu, CSR performance in China: The role of board gender and foreign ownership, *Journal of Corporate Finance* (2016), doi: 10.1016/j.jcorpfin.2016.11.001

CSR performance in China: The role of board gender and foreign ownership

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28 October 2016

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Acknowledgements: We wish to express our thanks to an anonymous reviewer for comments on an earlier draft of our paper.

CSR performance in China: The role of board gender and foreign ownership

Abstract

China's recent promotion of Corporate Social Responsibility (CSR) has coincided with a marked increase in the number of Chinese listed firms attracting female board members and foreign equity investors. Using *Rankins*' (RKS) ratings over the 2009 to 2013 period, we show that greater gender balance in top-management supports stronger CSR performance. This finding broadens gender-based accounts emphasizing social networks (Westphal and Milton, 2000), Critical Mass Theory (Kramer et al., 2006; Bear et al., 2010; and Soares et al., 2011) and team dynamics (Woolley et al., 2010; and Hoogendoorn et al., 2013). Findings also reveal stronger CSR performance in firms with a female CEO. Female leadership thus appears to be just as important as gender mix in driving CSR change.

CSR ratings are also increasing in foreign ownership levels. We examine whether a political-networking motivation underlies foreign investment (Du and Girma, 2010; Liu et al., 2014a; Lin et al., 2015; and Jiang and Kim, 2015). We argue that qualified foreign institutional investors (QFIIs) deploy social-engagement in non-SOEs to build competitive advantage. But in SOEs, where strong political networks already exist, QFIIs have less incentive to boost CSR ratings. However, results indicate little difference in the social ratings of QFII-invested SOEs and non-SOEs.

Additionally, we confirm the Barnea and Rubin (2010) contention of an inversion in social ratings at entrenched managerial ownership levels. Non-linear rating effects also emerge in relation to state ownership (Li et al., 2013). Finally, CSR performance exhibits positive (negative) relation with a listed entity's size and age (leverage and lagged return-on-equity) but virtually no connection with independent board representation.

Key words: Gender; CSR ratings; social performance; QFII; governance; and China.

JEL Codes: G38; J16; J31; M14; and L25

Highlights

- Gender diversity on boards promotes Chinese firms' social performance.
- The appointment of female officers to top-level management positions improves CSR ratings.
- Even higher ratings emerge in firms with gender diverse boards *and* female leaders.
- Social ratings are increasing in foreign ownership levels.
- QFII-invested SOEs and non-SOEs appear little different in terms of social rating.
- Ratings display negative (positive) relation with a firm's lagged financial performance and leverage (size and age).
- Ratings have little to no link with independent non-executive board director (INED) presence.

CSR performance in China: The role of board gender and foreign ownership

1. Introduction

Much of the recent attention on Corporate Social Responsibility (CSR) has shifted to China. This is perhaps not too surprising given the country's stratospheric growth of the last twenty years or so. China's exploration of CSR has also developed rapidly over the last several years (Shin, 2014). It is noteworthy that women and foreign owners have become increasingly important in the Chinese governance process during this recent time-frame. We address two very important questions which link China's changing corporate governance arrangements with its push toward more effective CSR-engagement. First, has the recent surge in female board participation (Lam et al., 2013; and Farag and Mallin, 2015) led to an improvement in corporate social ratings? Second, has the emergence of foreign ownership, and in particular Qualified Foreign Institutional Investor (QFII) presence, played a part in facilitating greater awareness of CSR? We address both questions by considering *Rankins'* (RKS) corporate social responsibility ratings for Chinese listed issuers over a recent five year time-frame.

The state is often regarded as the principal driver of CSR in China (see, for example, Guo et al, 2009; and Tang, 2012). However, the recent rise in female board representation in Chinese listed firms, as well as the marked increase in foreign equity ownership, opens-up new potential channels for CSR-engagement. The surge in the listing of non-state firms over more or less the same period may have given further impetus to such forces. If, as argued in Adams and Funk (2012), women are more inclined to focus on qualitative outcomes, increased female board presence may act as a fillip to CSR-engagement. Woolley et al.'s (2010) study of a "Collective Intelligence Factor" or "C-Factor" is also instructive. They report that female presence and team members' "social sensitivity" boost the "C-Factor". Moreover, they find women to be more "socially sensitive" than men.

Firms with greater female top-management presence may therefore be well-positioned to garner enhanced social *and* financial performance. CSRI (2012) offers compelling global evidence on the latter. A slew of US-based studies (Bear et al., 2010; Hafsi and Turgut, 2013; Huang, 2013; Harjoto et al., 2015; and Gupta et al., 2015) demonstrate stronger CSR engagement in gender-diverse top-management teams. Such findings counter suggestions of a trade-off between social- and financial goals. Greater social-engagement conceivably supports market share and thus adds value. We therefore focus on a conception of CSR that principally confers competitive advantage. This assertion is consistent with female directors' greater predilection toward charitable giving (see Williams, 2003), while simultaneously exerting tighter control over agency costs (Adams and Ferreira, 2009). Liao et al. (2016) cement the connection between social responsibility and monitoring by revealing that female directors in Chinese firms are more likely to seek external validation of CSR reports.

This study's analysis of top-management officer gender and CSR performance extends the largely US-focused literature to an important and materially different context. We also assess whether female *leadership* or board gender *diversity* imparts greater influence on social ratings. Results suggest that while gender diversity promotes Chinese firms' social performance, even stronger incremental rating effects emerge when female leadership accompanies board gender mix. We thus extend the literature on female leadership (Chapman, 1975; and Eagly and Carli, 2003) to a new domain. This contribution is important given the literature's emphasis on gender diversity (rather than female leadership) in driving CSR performance. Accounts stressing social networks (Westphal and Milton, 2000), Critical Mass Theory (Kramer et al., 2006; Bear et al., 2010; and Soares et al., 2011) and team dynamics (Woolley et al., 2010; and Hoogendoorn et al., 2013) all allude to the importance of diversity. We also consider changes in firms' CSR ratings following the appointment of female leaders. Findings suggest that such appointments *cause* subsequent positive social ratings change.

For foreign investors, the incentive to engage in meaningful CSR may depend on the target firm's strategic political affiliations. Liu et al. (2014a) indicate that QFIIs exhibit greater inclination for investment in state-controlled listed firms. This finding resonates with a political bridge-building account of investment (Du and Girma, 2010; Lin et al., 2015; and Jiang and Kim, 2015, p. 213). We conjecture that QFIIs leverage on the political-affiliations they build with state-controllers in SOE firms to develop spin-offs beyond the target firm. These benefits potentially include product and market licensing agreements in other business areas, as well as greater access to domestic RMB funding. In contrast, the weaker political connections evident in non-SOEs may incline foreign investors to promote CSR much more strongly in building-on and extending existing networks in the target firm. Such activity might be useful in procuring firm-level subsidies, access to bank funding, and so on. As these benefits should already be in place in most SOEs, the motivation for foreign entry into SOE and non-SOE entities is thus quite different. Additionally, QFIIs likely play a subordinate role to the state in the promotion of CSR in SOE firms. In non-SOEs, QFIIs perhaps perceive greater scope for meaningful CSR impact. Despite the compelling nature of such arguments, results offer only marginal support. Nonetheless, CSR ratings are increasing in the proportion of equity held by <u>all</u> foreign parties. This more general facet of foreign ownership extends Asian-market evidence (see Oh et al., 2011 for Korea). It also complements work on the influence of offshore suppliers and customers on CSR (Tsoi, 2010; and Cheung et al., 2014a), by exploring a much more direct channel of influence.

Managerial ownership also impacts on CSR performance (Atkinson and Galaskiewicz, 1988; Johnson and Greening, 1999; Barnea and Rubin, 2010; Oh et al., 2011; and Soliman et al., 2012). In particular, CSR ratings invert at high levels of insider ownership. Results in this area largely accord with contentions in Barnea and Rubin (2010). They argue that managers "overinvest' in CSR to promote social standing. But at high levels of ownership, managerial insiders bear disproportionately more of the drag-effect of social-expenditures on shareholder value. Entrenched managerial ownership thus

militates against CSR commitment. Non-linear associations with CSR are also evident in relation to state ownership (Li and Zhang, 2010; and Dam and Scholtens, 2012).

In terms of second-order findings, CSR ratings exhibit strong positive connection with firm age (time since listing), asset value and board size. In contrast, ratings display negative relation with a firm's lagged financial performance and leverage. Our study of year-on-year CSR ratings also allows for a clearer and more robust assessment of financial performance effects on Chinese firms' CSR activities (Li and Zhang, 2010; Li et al., 2013, Rutledge et al., 2014; and Farag et al., 2015).

Finally, CSR ratings exhibit little to no association with independent non-executive board director (INED) presence. This evidence contrasts with findings elsewhere, stressing INEDs' promotion of philanthropic and socially-based mores (Ibrahim et al., 2003: 399; Harjoto and Jo, 2011; and Cuadrado-Ballesteros et al., 2015). As argued in Yu and Zheng (2014), INEDs' weak bargaining-power undermines their mooted stewardship role in the Chinese market context.

2. Literature review and research questions

2.1. Background

Corporate bodies increasingly face stakeholder and external pressures to comply with sustainability norms. Such pressures have perhaps intensified in the aftermath of the Global financial Crisis (González and Martinez, 2004). Corporate Social Responsibility (CSR) thus constitutes a major area of disclosure and compliance for publicly-listed entities. As Almunawar and Low (2014) attest, the overarching objective is one of encouraging both corporate growth and wider sustainability issues.

The Chinese government has also been keen to promote CSR in its own market-place. Internal and external demands for greater disclosure on pollution, food quality, resource depletion and carbon emissions have also forced China to develop a range of localized CSR standards (see Gugler and Shi, 2009: p. 15; and Shin 2014). CSR now constitutes an important public policy issue for China, most especially for its state-owned and sponsored firms. Longstanding state support for CSR promotion has in fact been a characteristic of some of the world's leading contributors to sustainability, most notably Denmark (Vallentin, 2015) and the Scandinavian countries more generally.[1] Indeed, CSR may serve in spurring innovation and competitiveness at the macroeconomic-level (Boulata and Pitelis, 2014).

The bottom-line is that Chinese entities now face greater pressure to engage in CSR. But are such initiatives gaining momentum and finding broader penetration?[2] Yu and Choi (2016) argue that stakeholder pressure must be complemented by state-intervention and educational-initiatives

[1] The *2003 National Corporate Responsibility Index* highlights Scandinavia's longstanding leadership role in CSR, with four of the top-five hailing from this region.See Page 28 of the Responsibility Competitive Index (2003). More recently, Cai et al. (2016) identify factors relevant to cross-country variation in social reporting.

[2] See Lin (2010) for a detailed overview of the level of acceptance of China's CSR policies in earlier years.

emphasizing the vale-enhancing role of CSR.[3] [4] China's progression to a mixed economy also means that the Shanghai and Shenzhen stock exchanges now accommodate large numbers of privately-controlled firms. The situation 10 years earlier was radically different, with state-controlled enterprises overwhelmingly dominant in turnover and value terms. The recent surge in the listing of privately-controlled (i.e., non-state–owned) enterprises invites interesting comparison of SOE and non-SOE influence on CSR. Questions of board gender influence also arise in this context, given non-state firms' greater support and promotion of female leaders (Lam et al., 2013). Foreign ownership, too, has been on the rise. Large numbers of Chinese listed firms now house sizeable foreign minority equity stakes. It is thus timely to assess whether blended ownership promotes more effective CSR-engagement. Gender and foreign ownership occupy centre-stage in such deliberations.

This study's focus is on a broad-based composite measure of CSR performance, as provided by China's independent social ratings agency, RKS. As argued later in this paper (see Section 3), RKS scores impound information on a range of social reporting matters. Among other things, these areas cover an entity's (1) compliance with environmental regulations (2) support of worker and consumer rights, and (3) philanthropic/charitable commitments. The CSR literature also emphasizes these three broad strands of activity. Studies that stress the role of CSR in environmental-protection include Tang and Tang (2012), Huang (2013) and Farag et al. (2015). In respect of the second area, on labour and consumer rights, Lin (2010) explains how CSR interacts with Chinese laws and regulations in promoting workers' welfare and rights. Additionally, Delios et al. (2009) stress CSR in alleviating food safety issues. More broadly, Tian et al. (2011) demonstrate how CSR disclosure functions in refining consumer perceptions of product quality. Investigations emphasizing the philanthropic component of Chinese CSR-engagement include Williams (2003), Wang and Qian (2011), Jia and Zhang (2012, 2013 & 2014), Chen at al. (2015), Lin et al. (2015) and Cheng et al. (2016).

Most studies, including those mentioned in the foregoing, recognize that CSR is a multi-faceted concept, with a focus on environmental-protection, consumer and labour welfare, corporate philanthropy, and a host of related areas. However, some evidence suggests that entities stress CSR as a competitive profit-enhancing tool rather than a counter to social and environmental ills (Graafland and Zhang, 2014). Nonetheless, Zhang et al (2014) emphasize the importance of CSR in legitimizing business in an environment where "Moral Degradation" potentially undermines corporate credibility. They characterize such "Degradation" in terms of corruption, capital market malpractice, unsafe consumables and other market-based irregularities (see Zheng et al., 2014a, page 405).

[3] Tang and Tang (2012) identify government and industry competition as drivers in inducing compliance with Chinese environmental standards. There is also debate on the extent of such value enhancement. As a reference point, Clacher and Hagendorff (2012) observe mixed reactions to the announcement of a firm's inclusion in the UK FTSE4Good CSR index.

[4] CSR disclosure narrows information gaps and promotes price-discovery. He et al. (2013) identify an inverse link between CSR ratings and the dispersion of analysts' earnings forecasts. Analyst coverage also bolsters ratings (Zhang et al., 2015).

Finally, and as an overarching consideration, we emphasize that China is a relative newcomer to the field of CSR-engagement. Its development of localized standards, and push to implement meaningful CSR change, has only gained momentum in more recent years. There are therefore obvious problems in extrapolating findings from earlier cross-sectional analyses of CSR in China.

2.2. Research questions

Our first research question addresses the influence of board officer gender on CSR performance. At a fundamental level, gender helps explain wide-ranging differences in social preferences, attitudes and psychological phenomena (see, for example, Andreoni and Vesterlund, 2001; DellaVigna et al. 2013; Schwartz and Rubel, 2005; and Croson, and Gneezy, 2009). As relevant to CSR, Beutel and Marini (1995) observe that women are often more compassionate and less materialistic than men. Additionally, Adams and Funk (2012) note that female CEOs are more receptive to social and community needs, and are thus less likely to trade-off social activities against bottom-line outcomes.

US-based empirical accounts suggest a strong connection between female board presence and both philanthropic performance specifically (Wang and Coffee, 1992; and Williams, 2003) and social performance more generally (Bear et al., 2010; Hafsi and Turgot, 2013; Huang, 2013; and Harjoto et al., 2015). Nonetheless, Grosser and Moon (2005) suggest limits to gender equality in shaping CSR policy. Rao and Tilt (2016) also argue that the effect of gender on CSR performance is still at an exploratory stage. Cross-market studies also inform that gender is a key demographic in driving socially-responsible investment (Cheah et al., 2011).

We offer important development of the literature on women and CSR by distinguishing between gender leadership and diversity. Our first hypothesis (H1a) asserts that the role of gender in promoting CSR is most keenly felt where women occupy top-management or leadership positions.

H1a. *Higher CSR ratings are apparent in female-led firms.*

For the purposes of this study, we define leadership in relation to one or more of the following positions: CEO, vice-CEO, chair and vice-chair. In deepening our assessment of this theme, we extend cross-sectional analysis (H1a) of female leadership effects on CSR to a time-series setting (H1b). Specifically, does appointment of a female leader impact on a firm's subsequent CSR performance? Hypothesis H1b contends in the affirmative that it does.

H1b. *A firm's CSR rating increases following the appointment of a female board officer.*

Confirmation of both cross-sectional (H1a) and time-series (H1b) associations would offer compelling evidence of a positive female gender leadership effect on CSR performance.

Most studies on women and CSR focus on issues of board gender diversity, rather than leadership per se. The proportion of female board directors typically captures board gender diversity (see, for example, Bear et al., 2010; Hafsi andTurgot, 2013; and Huang, 2013). Accordingly, hypothesis H2 considers the relation between board gender diversity and CSR activity in the context of China.

H2. *CSR ratings are increasing in firms with greater board gender diversity (i.e., a higher proportion of female board directors).*

Our prime focus, given its importance in extending the literature, is on hypothesis H1 (rather than H2). It is also conceivable that enhanced CSR performance derives from gender leadership and not necessarily gender board diversity. Diverse boards without female leadership may be less receptive to social performance than boards with both (i.e., female leadership and diversity).

The background theoretical literature emphasizes diversity as the overarching factor. For example, Westphal and Milton (2000) argue that a minority board member's influence hinges on "social network ties" with the majority. Critical Mass Theory (CMT) prescriptions are also relevant. Kramer et al.'s (2006) US-based interview evidence suggests stronger governance in firms with at least three female board members. Work in social philanthropy (Soares et al., 2011) also supports the CMT proposition. Bear et al. (2010) report strong positive association between KLD-CSR ratings and *number* of female board members. They argue that greater female board presence promotes alternative "perspectives" and "issues" (Page 211). Boulouta (2013) argues that female board members may be particularly effective in remedying or mitigating the effects of "negative" corporate activities.

The literature also suggests that gender diversity acts in boosting mentorship channels (Terjesen et al., 2009), enhancing disclosure (Gul et al., 2011) and supporting firm-level innovation (Torchia et al., 2011). Increased gender leadership may also serve as a catalyst for diversity (Tate and Yang, 2015).

Additionally, the team dynamics literature emphasizes how gender *balance* imparts cognitive power to group decision-making (Woolley et al., 2010), thereby enhancing financial performance (Hoogendoorn et al., 2013). However, Adams and Ferreira (2009) caution that while greater diversity promotes better firm-level monitoring, it may not necessarily boost corporate value. Similarly, Gupta et al.'s (2015) ten-year study (2003-12) of US listed firms reveals that while board diversity garners increased social returns the same may not necessarily hold in respect of financial returns. Moreover, Sila et al. (2016) show that female board presence has limited effect on a firm's equity risk level. Faccio et al. (2016) demonstrate that female-led firms fare better in survival terms than male-led entities.

Our second major research question addresses how foreign ownership impacts on CSR performance. This issue is important given the quite recent introduction of foreign owners into listed companies on the Chinese mainland. Cheung et al. (2014a) report that Chinese firms' CSR

performance is increasing in their degree of internationalization. The underlying premise is that international counter-parties, especially those from developed markets, possess longer-standing and more-ingrained attitudes towards CSR. Cheung et al. (2014a) argue that foreign parties demand Chinese suppliers' compliance with such CSR norms. In terms of the geographical sourcing of revenues, they report stronger "internationalization" effects in non-SOEs.

Relative to overseas suppliers, foreign owners potentially offer a more direct and incisive channel for effecting CSR change. Offshore owners share in the financial success of the entities they invest-in. Where investment stakes are material, they also exert direct influence on board and governance activities (Oxelheim and Randoy, 2005). Such influence is perhaps most keenly felt when domestically-listed companies seek an overseas cross-listing. Regulatory standards in offshore markets like Hong Kong (for Chinese issuers with H-share listings) and the US (for ADRs representing underlying H-shares) invite important 'bonding' effects (Coffee, 1999; and Stulz, 1999). Li et al. (2015) argue that foreign investors' interpretation of firm-specific information may enhance the issuing entity's corporate governance. Building on this literature, we argue that cross-listing offers a conduit for stronger social-engagement. An overseas listing may also promote voluntary disclosure (Hope et al., 2013), and thus spur companies to engage in social reporting at levels above formal standards. Additional monitoring from overseas regulators, institutions and analysts potentially serves in promoting disclosure quality (see, for example, Karolyi, 2006).

Except for Boubakri et al. (2016), the link between cross-listings and CSR practice is largely unexplored. Chapple and Moon (2005) offer indirect guidance in relation to "international" Asian companies. They distinguish "domestic" and "international" companies in terms of export market focus and headquarter-base. However, only minor differences emerge in such firms' CSR practices.

The present study assesses "internationalization" effects on CSR ratings in relation to foreign investor participation. Specifically, hypothesis H3a contends that,

H3a. *A firm's CSR rating is increasing in its foreign ownership level.*

We capture foreign ownership in terms of (1) qualified foreign institutional investor (QFII) presence and (2) whether or not an issuer has offshore cross-listing.

The empirical evidence offers only limited guidance in respect of H3a. Only a few studies address the role of QFIIs in relation to the governance and performance of Chinese firms. Beatson (2014), for example, reveal that QFIIs exert positive effects on Tobin's Q and ROA levels. Huang and Zhu (2015), within the context of China's recent split-share reforms, show that QFIIs promotes minority investor interests. Mixed cross-country findings emerge when considering foreign investment outside the QFII realm. For respective Korean and Egyptian firm data, Oh et al. (2011) and Soliman et al. (2012) report higher CSR ratings in firms with greater foreign and institutional holdings. In contrast,

US evidence highlights either weak (Barnea and Rubin, 2010) or negative (Borghesi et al., 2014) institutional holding effects. Dam and Scholtens' (2012) European market analysis also reveals limited association. However, Wang and Chen (2016) find enhanced social performance in Chinese-listed firms accommodating greater institutional investment.

China's QFII Scheme is one of the few avenues available to foreign parties for A-share investment. However, ceilings on allocation as well as investment limits in individual stocks constrain investor access.[5] Moreover, the generally small quotas granted individual QFIIs often result in a splintering effect in foreign ownership within a given stock.[6] It is thus conceivable that China's QFII Scheme may not yet have attained sufficient scale to induce appreciable change in invested-firms' social policies. Some QFIIs may also view the Scheme as a political networking tool. This argument resonates with Liu et al. (2014a) evidence that QFII funds prefer investment in state-invested entities. Procurement of a "red hat" (Du and Girma, 2010) serves in building business opportunities with the Chinese government, extracting regulatory advantage and accessing state-controlled bank funding. If incentives are aligned as such, QFII participation is unlikely to generate major change in an underlying invested-entity's social-engagement. Rejection of H3 could be predicated on such grounds.

Foreign parties may play a supplementary role in China's push for cleaner energy. The related FDI literature is instructive. Liang (2008) argues that foreign investors on the one hand might relocate less-clean production to regulatory-light overseas jurisdictions. On the other, she argues that home-based regulatory norms might condition an FDI's behaviour overseas. Liang's (2008) China-based evidence is consistent with the latter so-called "halo" (Zarsky, 1999) effect. Foreign investment could also exert greater influence on the adoption of "clean" technology in non-state firms. Jia (2012) reveals that the career prospects of political decision-makers may inhibit switches from "dirty" to "clean" technologies. Nonetheless, Zheng et al. (2014b, page 62) indicate that senior political officials increasingly assess lower-ranking personnel in terms of broader societal and "sustainability" issues.[7]

Foreign investor effects may also differ across SOE and non-SOE firms. In particular, we conjecture via Hypothesis H3b that foreign parties exert greater influence on a listed firm's CSR-engagement and social policies when the firm is privately-owned. Accordingly, H3b asserts that,

H3b. *Foreign owners' impact on CSR ratings is more keenly felt in SOE than non-SOE firms.*

[5] As indicated in SSE (2016), the China Securities Regulatory Commission has until quite recently (July 2012) limited total QFII investment in an individual stock to a maximum of 20 percent of its outstanding shares. Reuters (2012) also reveals that the whole QFII Scheme captures just 1 percent of the value of the overall A- share market.

[6] To illustrate, the CSRC (2012) identified, as of 23 March 2012, 129 approved QFIIs with US$24.550 million of aggregate quota. This collective amount points to an average individual QFII quota of only US$190.3 million.

[7] Jia, Guo and Marinova (2013), in relation to China's "Clean Development Mechanism", stress the pivotal role of the state in both its application and regional focus. In the current section's discussions, we also leave to one side issues relating to foreign owners' impact on financial performance and investment efficiency (Chen et al., 2014). Notably, Chen, Sun, Tang and Wu (2011) observe state controllers' deleterious effects on investment efficiency.

In state-controlled firms, foreign parties may seek to build political networks and bridges with government-affiliated parties. The benefits from doing so may be multi-faceted, ranging from licensing and regulatory advantage to improved market access (Du and Girma, 2010). Where such a raison d'etre exists, QFIIs might trade-off the target asset's specific characteristics against wider benefits gleaned from engagement with state-related parties. In non-SOEs, this argument is less compelling, due to private owners' greater distance from the PRC state. Accordingly, QFIIs may pay more attention to firm specific attributes, like social ratings, when investing in non-SOEs.

The empirical evidence on QFII investment choices informs Hypothesis H3b. In particular, Liu et al. (2014a) reveal that QFIIs have a greater predilection to equity investment in state-owned firms, and that participation is increasing in the target entity's state ownership level. They find that the investment preference of QFII's contrasts with domestic Chinese fund managers who gravitate toward investment in non-state (i.e., legal-person controlled) A-share firms.

The Chinese state is also central in promoting other, wider facets of CSR. Related evidence suggests a greater concentration of CSR activity in listed SOEs, relative to privately-controlled public entities (Tang, 2012). For SOEs, preferential access to bank and equity funding (Cull et al., 2015) may hinge on compliance with government edicts on social matters.[8] However, only limited evidence exists to connect state-ownership with CSR-engagement. For European markets, Dam and Scholtens (2012) report broadly 'neutral" state-ownership effects. In respect of China and specifically 2008 SNAI CSR rankings, Li and Zhang (2010), report higher ratings in SOEs with greater government ownership. For privately-controlled entities they find that more diffuse ownership boosts CSR ratings.[9] In addition, Guo et al.'s (2009) examination of non-listed Chinese companies reveals that SOEs are much more likely to disclose CSR information than foreign-invested and privately-controlled entities. In another study, Li et al. (2013) report that state ownership mediates the positive link between financial and CSR performance. They deploy 2008 RLCCW ratings for Chinese listed issuers,[10] and reveal that CSR scores exhibit an inverse relation with an ROA*SOE dummy interaction term. Such evidence suggests a non-linear relation between CSR ratings and state-ownership. Specifically, China's most politically-strategic entities likely face greater pressure to conform to state directives on CSR matters. We therefore anticipate a positive effect on social ratings at high levels of government ownership. At such levels, an agency account of CSR-engagement, in which rent-seeking behaviour drives social expenditures (Barrios et al., 2014), is less compelling. Accordingly, hypothesis H4 asserts,

H4. *The relation between state ownership and CSR performance is non-monotonic. A negative relation gives way to a positive one at high (or concentrated) levels of state ownership.*

[8] See Tang and Li (2009) for CSR trends in China and Waworuntu et al. (2014) for the ASEAN region.

[9] Zu and Song (2009) add to this evidence by revealing that managers from small, state-owned entities often seek-out higher ratings. They ascribe this motivation to the economic benefits higher ratings generate.

[10] Li et al. (2013) cite the following link for RLCCW details: http://wenku.baidu.com/view/3d1f846b561252d380eb6ef2.html.

Our analysis offers in-depth assessment of the state ownership-CSR nexus. Rather than focusing on just one year of CSR data, as in Li and Zhang (2010) and Li et al.(2013), the present study assesses five consecutive years of data, 2009-2013.

The final hypothesis assesses the link between managerial ownership and CSR activity. Barnea and Rubin (2010) argue that managers "overinvest' in CSR so as to promote social standing and visibility. They suggest that higher CSR ratings afford insider-managers "personal benefits". However, a trade-off arises because of the adverse effect increased CSR expenditures imparts on the value of managerial insiders' equity holdings. Utilizing this premise, we argue that managers gain from CSR-engagement at low to medium equity ownership levels. Beyond a certain equity threshold, their engagement in social expenditure weakens. In the spirit of Barnea and Rubin (2010), Hypothesis H5 below posits a non-linear managerial ownership-CSR rating relation.

H5. *A positive relation exists between social ratings and managerial stakes at low to medium levels of ownership. However, this association inverts at high managerial ownership levels.*

Evidence, for respective US, Korean and Egyptian study samples, in Barnea and Rubin (2010), Oh et al. (2011) and Soliman et al. (2012), highlights a negative link between managerial ownership and CSR ratings.[11] Support for H4 could arise if CSR expenditure conceals agency issues (Prior et al., 2008; Martinez-Ferrero and Garcia-Sanchez, 2015). At low levels of ownership, managers may be relatively free to combine CSR and earnings smoothing activities. But at higher levels, "impression management" (Davidson et al, 2004) becomes far more costly for insider-managers.

CSR expenditure may also function as a political-bonding mechanism (Lin et al., 2015; and Jiang and Kim, 2015, p. 213). Hypothesis H5 also accommodates such arguments. Managers within smaller entities trade-off the political benefits gained from their firm's CSR expenditure against the cost impact on underlying equity value. At high ownership, managers experience negative marginal returns from this trade-off and thus curtail CSR expenditure. If CSR expenditure helps garner state funding and market access, negative marginal returns may only materialize at high managerial equity levels.

We investigate Hypotheses H1-H6 after due control for firm performance. Mixed findings emerge in the literature on the connection between firm profitability and CSR disclosure in Chinese firms.[12] For privately-controlled listed entities, Li and Zhang (2010) reveal a strong positive link between a firm's CSR rating and lagged return-on-equity (ROE).[13] In respect of SOEs, they observe a statistically insignificant association. For large-cap SOE firms, Rutledge et al. (2014) identify an inverse CSR rating-ROE association. They account for such an outcome in terms of the additional social and environmental costs deriving from CSR disclosure. Similarly, Farag et al. (2015) reveal weaker social

[11] As further background, Johnson and Greening (1999) show that managerial stakes have a positive link with a "product" dimension of social performance; but a non-directional one with "people"-based measures.

[12] See, for example, Bai and Chang's (2015, p. 506) commentary on this issue.

[13] Guo et al.'s (2009) analysis of non-listed Dalian firms indicates CSR activity is increasing in profitability.

performance in firms with higher ROA numbers. They determine causality from financial to social performance.[14] Elsewhere, Giuli and Kostovetsky (2014) find that firms investing in CSR often experience subsequent deterioration in ROA. Deng et al. (2014) reveal that CSR-invested firms are more likely to complete corporate acquisitions and garner positive long-run stock returns.

In terms of disclosure activity, Cheung, Lin and Wong (2015) show, for 2008 and 2009 CSR reporting in China, that disclosure is increasing in prior year's financial performance level. ROA figures also appear higher in the year immediately following disclosure. A myriad of reasons exist for CSR disclosure. At one level, it serves as a political-bonding tool (Lin et al., 2015). This notion accords with Wang and Qian's (2011) evidence that listed Chinese non-SOEs gain more in terms of "political resources" from philanthropic activities than SOEs. Greater social-engagement also potentially facilitate better trade credit terms for non-SOEs (Zhang et al., 2014), stronger access to bank funding (Chen et al., 2015) and supports customer perceptions (Deng, 2012).[15]

3. Sample selection and data collection

The research questions we advance assess the extent to which board officer gender and foreign ownership shape CSR performance in Chinese joint-stock companies. We address these issues by constructing a sample of firms with A-share listing presence on either the Shanghai or Shenzhen Stock Exchanges for each of five years, 2009-13. All sample firms (n= 2,412) receive social ratings from *Rankins* (*RKS*), the leading independent CSR entity in China.[16] *RKS* provides yearly CSR ratings, with ratings available from 2009. It covers all listed firms issuing CSR reports in China. Table 2a reports sample selection details and the year-by-year distribution of observations.

Our analysis requires complete data for all key variables. Accordingly, some CSRD=1 cases are lost from analysis due to missing information on one or more of the explanatory variables in our principal regression models (see Equations 1 & 2 in Section 4). This procedure allows for a uniform number of observations across all tables and regressions. It results, as shown in Table 2a, in a contraction in CSRD=1 cases of only 3.5%. The loss of firm-year observations is principally confined to CSRD=0 values. As our explicit focus is on CSR reporting entities (i.e., CSRD=1 firm-year cases), the procedure has limited impact on results but provides for consistency of interpretation across regressions.

RKS determines corporate ratings in relation to three principal areas of reporting, defined under the headings Macrocosm, Content and Technique. The first of these relates to the overall strategy,

[14] They examine 149 non-financial companies contained within the Shanghai SSE 180 index. They account for the latter in terms of the Preston and O'Bannon (1997: 423) "Managerial Opportunism Hypothesis" (Page 9).

[15] Further afield, Samy et al. (2010) argue that CSR investment protects British firms' competitive advantage while satisfying stakeholder demands. Xu et al. (2015) observe significantly lower capital cost in firms with stronger CSR scores. They indicate that such scores yield greater cost of capital benefit for non-SOEs. Similarly, Ye and Zhang (2011) show that CSR disclosure reduces Chinese firms' debt funding cost, so long as CSR investment is at sub-optimal levels. Moreover, if CSR disclosure reinforces overall firm governance, it should also be value-enhancing (Cheung et al., 2014b).

[16] http://www.rksratings.com/.

governance and information disclosure channels deployed in an entity's social reporting activities. The third dimension, "Technique", relates to the depth, coverage and consistency of reporting. "Content" is arguably the most important of the three areas. Four principal dimensions underlie this component. RKS defines these in relation to an entity's: (1) "Economic Performance", (2) "Labour and Human Rights", (3) "Consumption", and (4) "Community Participation".[17]

RKS's CSR rating of an entity is thus a composite measure reflecting an amalgam of social reporting issues and factors. Among other things, ratings encapsulate an entity's orientation, strategy and ability to meet environmental concerns, as well as its focus on philanthropic and charitable works. Recent academic investigations highlight the prominence of RKS in China in guiding investors' awareness of the quality and content of listed firms' overall social reporting activities (Marquis and Qian, 2014; Hung et al., 2015; Lau et al., 2016; and Luo et al., 2016).

Descriptive statistics in Table 2b highlight the major differences between firms that disclose CSR reports (CSRD=1) and those that do not (CSRD=0). For the five-year period, the disclosure rate appears to be just under 30 percent (see Table 2a). Rated firms typically exhibit much higher state ownership than non-rated firms. For instance, the median percentage for disclosing firms is 26.0% of total ownership, as compared to 2.2% for non-disclosing firms. CSRD=1 firms are also generally larger in terms of Firm Size (measured by the natural log of total assets and board size. They are also more mature (Age) and more highly-geared (LEV) than CSRD=0 firms. Additionally, and consistent with Wang and Chen (2016), QFII presence is more readily apparent in firms disclosing CSR reports.

We utilize the *WIND Info* database[18] in determining the identities of A-listed firms and their ownership characteristics. The WIND Info database and the GTA-CSMAR platform feature for firm-level accounting data.[19] Stock market, accounting and finance-related studies of China commonly employ one or other database (see Liu et al., 2014a).

4. Research design and description of variables

We offer the following lead-lag panel regression model to test our five hypotheses.

$$
\begin{aligned}
&CSRR_{it} \\
&= \alpha_0 + \alpha_1 FCEO_{it-1} + \alpha_2 FChair_{it-1} + \alpha_3 FD_{it-1} + \alpha_4 ID_{it-1} + \alpha_5 Duality_{it-1} \\
&+ \alpha_6 BoardSize_{it-1} + \alpha_7 ManagerialSize_{it-1} + \alpha_8 ManagerialOwnership_{it-1} \\
&+ \alpha_9 StateOwnership_{it-1} + \alpha_{10} SOE_{it-1} + \alpha_{11} H10_{it-1} + \alpha_{12} Qfiid_{it-1} + \alpha_{13} AGE_{it} + \alpha_{14} LEV_{it} + \alpha_{15} ROE_{it}
\end{aligned}
$$

[17] For specific details, see http://www.rksratings.com/index.php/Index/Report/index. The pdf file of interest is: "MCT 社会责任报告评级工具 2012_1.2i 版本 2012-11-30".
[18] Wind Information Co., Limited: http://www.wind.com.cn/en/
[19] http://www.gtadata.com/products/plist.aspx

$$+\alpha_{16}FirmSize_{it}+\alpha_{17}SHSE_{it}+\alpha_{18}Oversea_{it}+\alpha_{19-33}IndustryDum_{it}$$

(Equation 1)

Where $CSRR_{it}$ is the CSR rating of firm *i* in year *t*;; $FCEO_{it-1}$ is a dummy variable for female CEO or vice-CEO (1=female CEO or vice-CEO; and 0 if both are male); $FChair_{it-1}$ is a dummy variable for female Chair or vice-Chair (1=female Chair or vice-Chair; and 0 if both are male); ID_{it-1} is the percentage of independent board directors of firm *i* in year *t-1*; $Duality_{it-1}$ is a dummy equal to 1 if CEO and board chair are the same person and 0 otherwise; $Board\ Size_{it-1}$ is the natural log of the total number of directors of firm *i* in year *t*-1; $Managerial\ Size_{it-1}$ is the natural log of the total number of executive managers of firm *i* in year *t*-1; $Managerial\ Ownership_{it-1}$ is the ownership percentage by executive managers of firm *i* in year *t*-1; $State\ Ownership_{it-1}$ is the state ownership percentage of firm *i* year *t-1*; SOE_{it-1} is a dummy variable that is 1 for state-owned enterprises and 0 for non-state-owned enterprises in year *t-1*; $H10_{it-1}$ is the Herfindahl index for ownership concentration (= squared sum of the percentage of shares held by the ten largest shareowners) of firm *i* year *t-1*; $Qfiid_{it-1}$ is a dummy variable that takes the value of 1 for firms with foreign shareholders in year *t-1* and 0, otherwise; AGE_{it} is the natural logarithm of the firm's listing age of firm *i* in year *t*; LEV_{it} is the leverage ratio of firm *i* calculated as the ratio of total debts scaled by total assets in year *t*; ROE_{it} is the return on equity of firm *i* in year *t*; $Firm\ Size_{it}$ is the natural logarithm of firm *i*'s total assets in year *t*; $SHSE_{it}$ is a dummy for place of listing, equal to 1 if the sample firm *i* is listed on SHSE and 0 if listed on SZSE; $Overseas_{it}$ is a dummy for cross-listing, equal to 1 if firm *i* is cross-listed overseas and 0 if listed only domestically; and *IndustryDum* refers to 15 industry dummies in respect of 16 identified business sectors.

Board gender diversity (FD) is pivotal in Equation 1. This variable captures the proportion of female board directors. Its inclusion reflects the purported role of female support mechanisms (Bell, 2005), social networks (Westphal and Milton, 2000), Critical Mass Theory (Kramer et al., 2006; Bear et al., 2010; and Soares et al., 2011) and team dynamics (Woolley et al., 2010; and Hoogendoorn et al., 2013) in shaping the quality and content of social reporting activities. The FD measurement form for gender balance features widely elsewhere (for cross-country comparison, see Terjesen and Singh, 2008). Liu et al. (2014b) also report higher return-on-sales and return-on-assets figures in Chinese-listed entities that possess a greater proportion of female board directors.

In Equation 1, a current-year's CSR rating is explained by prior year-end explanatory variable values. Given our focus in hypothesis H1a on female leadership, we include variables $FCEO_{it-1}$ and $FChair_{it-}$ The former is a dummy for an entity with female CEO and/or vice-CEO in year *t-1*. Similarly, $FChair_{it-1}$ receives value one for firms with a female chair and/or vice-chair in year t-1.

In additional regressions (Appendix 2) we also replace $FCEO_{it-1}$ and $FChair_{it-1}$ by more narrowly-focused measures, namely $FCEO1_{it-1}$ and $FChai1r_{it-1}$. The latter capture dummies excluding female vice-CEOs and vice-Chairs. Table 1 reveals respective means for $FCEO_{it-1}$ and $FChair_{it-1}$ of 0.34 and 0.09. Therefore, 34 (9) percent of sample firms have at least one female person occupying the role of CEO or vice-CEO (Chair or vice-Chair). Appendix 1a sets-out additional descriptive statistics on $FCEO_{it-1}$ and $FChair_{it-1.}$ Female CEOs appear to be more common among non-SOE firms than SOEs. The respective means for the period 2009-13 are 9 and 4 percent. These levels appear similar to those reported for years just prior to 2009. For instance, Lam et al. (2013: 1143) report female CEO participation rates for 2008 of 8.3 and 3.5 percent in respect of non-SOE and SOE entities. They demarcate firms into SOE and non-SOEs in terms of a state ownership threshold of five percent.

The present study focuses on one principal board demographic: gender. We emphasize this governance characteristic in terms of both *diversity* and *leadership*. Our analysis is largely silent on other demographic measures of heterogeneity such as board ethnicity. Above all, the vast majority of board members in Chinese A-listed firms are Chinese nationals. Some studies elsewhere, particularly for the US, identify board ethnicity as an important dimension of diversity and thus a possible determinant of social performance (Hafsi and Turgut, 2013; Harjoto et al, 2015; and Gupta et al., 2015).

The Chinese state's role in directing and promoting CSR is pivotal (Tang, 2012). Accordingly Equation 1 incorporates either continuous variable State Ownership or dummy SOE. Inclusion of such effects allows for direct examination of hypothesis H4. Dummy variable SOE receives value one where the "ultimate owner" of a listed entity is state-related. We follow Wang, Wong and Xia's (2008) prescription by recognizing SOEs as entities where the "Ultimate Owner" (controller) or largest investor holds 20 percent or more of outstanding stock. As reported in Wang et al. (2008: 116), Chinese listed firms' must report "Ultimate Owner" information in annual reports. Our continuous state-ownership variable, State Ownership, captures the proportion of outstanding shares held by state-parties. Table 1d reports an SO mean of around 17.5 percent. As reference, Lam et al. (2013: 1137) document a general decline in this mean over the 2000-2008 (from 35.2 to 21.9 percent). We confirm a continuation in this trend, specifically between 2009 and 2013. Much of the explanation for the drop on mean SOE levels is due to greater numbers of non-state firms listing in more recent years. This trend owes much to the creation of the Shenzhen Stock Exchanges' hi-tech ChiNext board (in 2009) and the growing maturity of its SME boards (introduced in 2004).[20]

For foreign ownership effects (hypothesis H3a), Equation 1 incorporates two variables, Qfiid and Overseas. Variable Managerial Ownership features in respect of hypothesis H5. We also control for important governance effects, such as the proportion of INEDs on boards (ID) and the presence of a unified CEO/chair (Duality). Lattemann et al. (2009: 431) posit greater transparency, and thus stronger CSR-engagement, in firms that separate CEO and chair positions.

Widespread evidence suggests that corporate size and financial resources matter in promoting effective social-engagement (Adams and Hardwick, 1998; Cormier et al., 2005; Reverte, 2009; and Gallo and Christensen, 2011). Equation 1 thus includes controls for board, management and firm size (Board Size, Managerial Size & Firm Size). The period since a firm's date of listing (Age) controls for an entity's maturity (Withisuphakorn and Jiraporn, 2016).

Equation 1 also takes account of a firm's ownership concentration (H10). Consistent with prior studies, an approximation of the Herfindahl index captures such concentration (Haniffa and Cooke, 2002; and Li et al., 2013). Li and Zhang (2010) demonstrate that ownership concentration improves

[20] As further reference points, McGuinness et al. (2015: 1008) report a state ownership mean for 2000-8 of approximately 31.4 percent (n = 11,687), while Hou et al. (2012) for 2001-8 document a mean of 31.8 percent (n=9,871).

social ratings in SOEs while weakening it in non-SOEs. Variable LEV controls for gearing due to the resource constraint that debt impose on CSR expenditures (Barnea and Rubin, 2010).

We also control for lagged financial performance (ROE). Our study of year-on-year CSR ratings extends assessment of financial performance effects on CSR in China (Li and Zhang, 2010; Li et al., 2013, Rutledge et al., 2014; and Farag et al., 2015). As noted in Cheng et al. (2015), some earlier study findings are limited by a focus on a single year of CSR (i.e., 2008 SNAI) ratings.

Variable ID controls for independent non-executive directors' (INEDs) moderation of CSR-engagement. Ibrahim, Howard, and Angelidis (2003: 399) argue that INEDs are more philanthropic than insiders. International empirical evidence (Harjoto and Jo, 2011 and Cuadrado-Ballesteros et al., 2015) also supports a positive link between INED presence and a firm's level of socially-responsible investment. Inclusion of ID also helps assess the relative importance of shareowner and board influence on CSR ratings (Barrios et al., 2014).

Equation 2 takes into account nonlinearities in ownership structure and board characteristics (namely, gender diversity and director independence). In Equation 2, we include squared terms for four of the independent variables in Equation 1. Specifically, for board gender diversity (FD), board independence (ID), Managerial Ownership and State Ownership.

$$CSRR_{it} = \beta_0 + \beta_1 FCEO_{it-1} + \beta_2 FChair_{it-1} + \beta_3 FD_{it-1} + \beta_4 FD^2_{it-1} + \beta_5 ID_{it-1} + \beta_6 ID^2_{it-1} + \beta_7 Duality_{it-1}$$
$$+ \beta_8 BoardSize_{it-1} + \beta_9 ManagerialSize_{it-1} + \beta_{10} ManagerialOwnership_{it-1} + \beta_{11} ManagerialOwnership^2_{it-1}$$
$$+ \beta_{12} StateOwnership_{it-1} + \beta_{13} StateOwnership^2_{it-1} + \beta_{14} SOE_{it-1} + \beta_{15} H10_{it-1} + \beta_{16} Qfiid_{it-1}$$
$$+ \beta_{17} Oversea_{it} + \beta_{18} AGE_{it} + \beta_{19} LEV_{it} + \beta_{20} ROE_{it-1} + \beta_{21} FirmSize_{it} + \beta_{22} SHSE_{it}$$

(Equation 2)

In the above, FD^2 is the squared term for FD of firm i in year t-1; ID^2 is the squared term for ID of firm i in year t-1; Managerial Ownership^2 is the squared term for Managerial Ownership of firm i in year t-1; and StateOwnership^2 is the squared term for State Ownership of firm i in year t-1.

Equations 1 and 2 also contain dummies to account for variation in CSR rating by exchange-trading venue (Shanghai versus Shenzhen). We also control for variation arising from business sector (Guthrie and Roth, 1999; Burress and Zucca, 2004; Bell, 2005; and Melo and Garrido-Morgado, 2012), in terms of 15 dummies (for 16 industry sectors). From within the sub-sample of privately-controlled firms, female CEOs are most prominent in sectors for culture, water & environment and agriculture. For SOE firms, greater female CEO representation is evident in the hotel & catering, wholesale & retail, real estate and agriculture sectors. Appendix 1b reports bivariate correlations for all variables.[21]

[21] In controlling for the effects of outliers, we adopt a natural log form for the variables for board size, management size, firm size and age. For ROE and LEV, we winsorize the top and bottom 1 percent of the respective distributions.

5. Empirical analysis

5.1 Principal findings

Table 3 reports regression results of Equation 1. The major variables of interest for gender leadership are FCEO and FChair. Both are significant in relation to CSR ratings, with FCEO especially so. Results thus offer strong support for hypothesis H1a. Importantly, significant female leadership effects remain robust after separate control for gender board diversity (FD). This observation suggests strong support for Hypothesis H2. Table 4 reaffirms this picture, where FD features without inclusion of female leadership variables and associated interaction terms. Results in Tables 3-4 thus point to the importance of female leadership *and* gender board balance in supporting CSR ratings.

More broadly, findings in this area add to and extend related US-evidence on diversity effects (Harjoto et al., 2015, Hafsi and Turgut, 2013; Huang, 2013; Bear et al., 2010, and Rao and Tilt, 2016). It is also noteworthy that in Table 3 regressions, the p-values on estimated FD coefficients are at similar levels to those on FCEO. All in all, Tables 3 and 4 offer strong support for both hypotheses H1 and H2. Results thus indicate that the positive effect of female top-management participation on CSR-engagement reflects both leadership and board diversity effects. This position is corroborated when we consider non-linear FD effects (see Table 5).[22] In addition, estimated coefficients for FD and FD^2 are both positive, supportive of a linear association between CSR ratings and female director presence.

Results in Tables 3-5 indicate the absence of a significant positive foreign ownership effect (Qfiid and Overseas) on social ratings. Thus, little initial support is on offer for hypotheses H3a. Such results contrast with findings in other emerging markets, where the broader evidence points to foreign owners supporting social-engagement (Oh et al., 2011; and Soliman et al., 2012). Nonetheless, our results reaffirm findings on foreign-investor effects in developed market settings (Barnea and Rubin, 2010; and Dam and Scholtens, 2012). Findings in relation to our cross-listing dummy (Overseas) question whether the purported 'bonding', governance and disclosure (Coffee, 1999; Stulz, 1999; Oxelheim and Randoy, 2005; Karolyi, 2006 and Hope et al., 2013) effects of an offshore listing extend to areas like social-engagement. Our results for Qfiid, which in some regressions show significantly negative CSR rating effects, still accord in some sense with a political bridge-building notion of foreign investment (Du and Girma, 2010; Liu et al., 2014a; Lin et al., 2015; & Jiang and Kim, 2015). In this conception, CSR-engagement is not the top-priority for a QFII investing in a state- or politically-connected entity.

In respect of hypothesis H4, Tables 3-5 highlight a negative relation between state ownership levels and CSR ratings. However, and as revealed in Table 5, non-linear effects are important. Specifically, when considering firms with large amounts of government holdings (see State $Ownership^2$ in Table 5), the relation between state holdings and CSR-engagement turns positive. But as the relevant estimated coefficient is insignificant, the second premise of Hypothesis 4 receives only partial support. The first

[22] We also check for on-linear effect in relation to other board characteristics. Perhaps not surprisingly, given the lack of significance of ID, a squared term for ID appears as an insignificant explanatory variable. We do not report regressions featuring this squared term.

premise of Hypothesis 4, which indicates a significantly negative relation between state ownership and social ratings, receives strong support in Table 5. Likewise, dummy SOE is significant and negatively-signed in Table 3. We also consider non-linear effects in relation to FD in Table 5.

The analysis reported in Table 6a reflects two subsample groups: one for SOE firms (n=1,297 cases) and another for non-SOEs (n=1,115 cases). We define an SOE in accordance with Wang et al. (2008), where the largest shareowner is a government-owned entity holding more than 20% of the firm's stock. Interestingly, the female leadership dummy FCEO appears strongly significant across both issuer types. In contrast, foreign ownership dummies Qfiid and Overseas appear insignificantly different from zero in each of the SOE and non-SOE subgroup regressions. Nonetheless, the signs on the estimated coefficients on Qfiid are in accordance with Hypothesis H3b. But, overall, such results provide only limited support for H3b.

We deepen analysis on this issue by considering a continuous variable, Foreign. This variable captures the proportion of a firm's outstanding equity held by foreign investors, and includes all offshore H-shares, Qfiid holdings (held within the tradable A-share float), B-shares, as well as any non-listed foreign legal-person shares outstanding. Results for this continuous variable run counter to Hypothesis 3b. In fact, positive and significant effects are noted with CSR ratings in the SOE subsample; with no effect apparent in the non-SOE sub-group. Table 6b sheds further light on the association between foreign investor influence and CSR ratings by considering two different sub-samples: one where State Ownership is absent and the other where State Ownership is positive. Similar effects to those reported in Table 6a emerge in respect of variable Foreign. All in all, our analysis yields minimal support for Hypothesis 3b.

In drilling deeper, Table 7a offers insight into state ownership interaction effects with the QFII dummy variable, Qfiid (see Table 7a). The relevant interactions are Qfiid*STDUM1, Qfiid*STDUM2 and Qfiid*STDUM4. STDUM1 is a dummy with value 1 for firms with no state ownership. STDUM2 (STDUM4) captures firms with state ownership between 0 and 10 (between 25 and 100) percent. Two issues underlie our choice of thresholds. First, in firms where state presence exists, ownership tends to be clustered between 10 and 25%. Second, given the dispersion of non-state holdings across legal-person owners and other investors (principally domestic Chinese institutional investors holding tradable A-float), the state may exercise effective control at ownership levels as low as 25%. Shareholder dispersion allows for control well below 50% ownership. China's own Takeover Code (see King & Wood Mallesons, 2014) recognizes this point. It defines "control" when principal connected parties own 30% or more of a company's voting rights. We adopt a slightly more conservative threshold of 25%, given (1) the recent contraction in average state ownership levels in

Chinese listed firms,[23] and (2) the possibility that one or more legal person investors may be state-"connected". International evidence also informs our choice of threshold. Morck et al. (1988, page 302) indicate US boards often exercise control with as little as 25% of a firm's voting rights. Similarly, both Hong Kong and the UK, in their respective takeovers Codes, define control at 30 percent.[24]

Results in Table 7a reveal a positive CSR rating effect when QFII investment arises in entities without state equity ownership. However, the CSR rating effect either inverts or becomes insignificant in relation to QFII investment in state-invested entities. Such results are consistent with QFIIs adopting a political bridge-building hypothesis when investing in state-owned entities (Du and Girma, 2010). The corollary, as supported in table 7a, is that QFIIs are more inclined to support CSR-engagement when the rationale for investment is non-political.[25] In Table 7b, we adopt slightly different thresholds of state ownership in relation to Qfiid interaction. Findings appear broadly similar to those in Table 7a for firms without state ownership. Mixed effects emerge at other thresholds.

For our last remaining hypothesis, H5, the various results catalogued in Tables 3-7 reveal that Management Ownership has a positive association with CSR ratings. In many of these regressions, the effect is strongly significant. At first sight, such results contradict hypothesis, H5. However, Table 5 demonstrates that non-linear effects underlie the overall association. In particular, results reveal significantly lower ratings in firms with entrenched insider, i.e., high Managerial Ownership.[2] This outcome contrasts with the positive link evident at lower ownership levels. The reversal of the relation at higher managerial ownership levels supports H5 as well as contentions in Barnea and Rubin (2010).

Tables 3-7 reveal minimal link between CSR activity and the proportion of a board's independent board directors (ID). This finding contrasts with international evidence (Harjoto and Jo, 2011 and Cuadrado-Ballesteros et al., 2015). The outcome likely reflects important institutional differences between China and developed Western-markets (Chang et al., 2015). Yu and Zheng (2014) argue that inadequate legal safeguards in China weaken the de facto independence of INEDs. Ownership may also mediate independent director effects. Cuadrado-Ballesteros et al. (2015) observe that family-control offsets the positive CSR disclosure effect of INEDs. Institutional ownership may also matter (see, for example, Johnson and Greening, 1999). But for Chinese firms' CSR activities, the lack of significance of interaction term (ID*SOE) in Table 4 suggests the state does not directly limit INED influence. Moreover, INED influence has little bearing on CSR ratings for either SOEs or non-SOEs.

In terms of other control effects, Tables 3-7 indicate strong positive associations between CSR ratings and a listing entity's age as well as with various dimensions of firm size (Board Size, Managerial

[23] Lam et al. (2013: 1137) report that the average state ownership level in mainland China listed companies declined from 35.2 to 21.9% over the period 2000-8. This partly reflects new incoming share owners in state-invested companies, as well as an increase in the number of listings of non-state-invested firms.

[24] For the UK, see section C7 of The City Code (2016). For Hong Kong, see Def-8 of the Codes on Takeovers and Mergers and Share Repurchases (2010).

[25] We also examine interaction terms between qfiid and our measures of gender diversity and leadership. Results suggest weak interaction effects in relation to CSR scores.

Size and Firm Size). In contrast, and consistent with Barnea and Rubin (2010), CSR ratings display a significant inverse relation with corporate leverage (LEV). We also observe a negative relation between CSR ratings and lagged financial performance (ROE). Results in this last area add to Farag et al.'s (2015) recent evidence (in relation to the social and financial performance of SSE-180 Index constituents). Finally, results show that after control for effects like firm size and state ownership, the place of exchange-listing (dummy SHSE) has no significant bearing on CSR ratings.[26]

5.2. Robustness and endogeneity checks

Other than the strong support evident for hypothesis H5 (managerial ownership), the key take-way in our empirical set of results (Tables 3-7) is the resilience of the female leadership (FCEO) and board gender diversity (FD) variables. The strong positive associations evident across sub-sample and full-sample regression provide compelling support for the respective hypothesis (H1 & H2). We add to such support by considering further analysis in relation to the important gender effects emanating from leadership (FCEO) and diversity (FD).

First, in Appendix 2, we consider a narrower conception of female leadership by removing vice-CEOs and vice-chairs from our definitions of FCEO and FChair. The resulting dummies, FCEO1 and FCHAIR1, have respective means of 0.09 and 0.04. Replacement of the broader-based FCEO measure by the narrower FCEO1 form results in some loss of significance for a female leadership effect (see Appendix 2). The same is not so in respect of FChair and FChair1.

Second, and perhaps more important, endogeneity may be a concern in relation to the overall connection between gender and CSR ratings. Our earlier analysis partially accounts for this issue through its use of lagged variables. Analysis in Table 8 addresses this issue in a more formal manner by examining the time-series properties of female leadership appointments on social rating change (hypothesis H1b). Through such an "event-study" approach (Francoeur et al., 2014), we conveniently side-step any need to search for an elusive instrument for gender.

$\Delta CSRR_{t-1,t}$ figures as the dependent variable in Table 8 regressions. It captures the percentage change in a firm's CSR rating between year t-1 and year t (i.e. $\Delta CSRR_{t-1,t.} = (CSR_{t}\text{-}CSR_{t-1})/CSR_{t-1}$). Our principal focus is on dummy Appointment, assigned value one in cases where a firm introduces a new female top-management officer in year t-1. All other explanatory variables in Equation 1 are configured into change variable (i.e., Δ) form. So, for a given firm A, with female top-management appointment in

[26] We also run separate regressions for Shanghai- (SHSE) and Shenzhen- (SZSE) listed firms. Cross-listings between the two exchanges are not permitted. For regressions of Shanghai-listings only, significantly stronger CSR ratings emerge for SOEs. The reverse applies for Shenzhen-listed firms. Variable FCEO remains positive and significant in both sets of regressions. Gender diversity variable FD only retains positive significance for SHSE listings. For hypothesis H4, CSR ratings are decreasing in SOE levels, but this effect is only significant for SZSE listings. For hypothesis H3a, cross-listings correlate with stronger (weaker) ratings for SHSE- (SZSE-) firms. No significant link exists between CSR ratings and qfiid on either exchange. For reasons of brevity, tables do not report the above results (but are available on request).

2011, we calculate the percentage change in its CSR rating between 2011 and 2012. Variable Appointment receives value one in such a case. To provide a meaningful benchmark for comparison, we consider CSR rating change for the same firm (A) for the year (i.e., 2009 to 2010) when no female appointment arose (i.e., 2009). Value zero thus applies to dummy Appointment for this firm-year case. This approach is preferable to a matching-pairs design, in which a different control firm is paired contemporaneously with target.[27] Our approach thus compares CSR rating change in the same firm but over different periods.[28]

Results in the first column of Table 8 reveal a significant positive relation between $\Delta CSRR_{t-1,t}$ and Appointment. This evidence strongly supports hypothesis H1b and reinforces the cross-sectional evidence gathered in tables 3-7 in support of hypothesis H1a. In a further regression (Table 8, second column), we also consider the interaction between Appointment and a firm's past return-on-equity change, ROE(t-2,t-1). This stage of analysis controls for a possible "glass cliff" effect (Ryan and Haslam, 2005). This effect asserts that appointment of a female leader is more likely in firms subject to challenging financial circumstances. Variable Appointment remains strongly significance even after controlling for such possibility. We therefore surmise that the positive female leadership effect on CSR ratings exists after control for a firm's prior level of financial performance.

In a further stage, we control for a possible self-selection bias using a Heckman (1976, 1979) two-step procedure (see Table 9). By utilizing an additional independent variable (i.e., the Inverse Mills Ratio), the regression adjusts for endogeneity in relation to female leadership. Again, strong positive effects remain for both female leadership (FCEO) and board diversity (FD) effects in relation to CSR ratings.[29] Results in Tables 8-9 therefore offer a further layer of support, to complement the already compelling body of evidence in Tables 3-7, of a resilient and marked female leadership and gender board balance effect on Chinese listed firms' CSR ratings.

6. Conclusions

In terms of *Rankins*' CSR ratings for five consecutive years, 2009 to 2013, the present investigation reveals that board officer gender exerts appreciable influence on corporate social-engagement. A major contribution of this study is the distinction drawn between female leadership and gender board

[27] Suppose a female leader is appointed in firm B in 2009. Firm B's CSR rating change is thus calculated between 2009 and 2010 (Appointment=1). The absence of RKS CSR ratings prior to 2009 means that the control observation is B's CSR rating change between 2010 and 2011, reflecting a year (2010) when no female appointment occurs in B (Appointment =0).

[28] Appointment=1 cases slightly outnumber Appointment=0 cases. This situation is due to a small number of firms with only two years of CSR rating data. For such firms, it is impossible to find a controlled observation (Appointment=0). There are 110 top-level female appointments (to female CEO/vice-CEO or female chair/vice-chair positions) during the 2009 to2013 period. The total number of observations available in Table 8 is 213. This reflects the 110 Appointment=1 cases plus 103 observations for CSR rating change when no female leadership appointment arose (Appointment=0).

[29] Another approach is to adjust for endogeneity by adopting a 2SLS estimation design with instrumental variable (see Jia and Zhang, 2012, in relation to female board member participation). Given difficulties in finding an appropriate instrument, we focus on the Heckman (1976, 1979) approach as a preferred alternative.

diversity. The prevailing focus heretofore has been on diversity issues. This focus on gender diversity is implicit to accounts emphasizing social networks (Westphal and Milton, 2000), Critical Mass Theory (Kramer et al., 2006; Bear et al., 2010; and Soares et al., 2011) and team dynamics (Woolley et al., 2010; and Hoogendoorn et al., 2013). The spin-off benefits arising from diversity include enhanced monitoring, more incisive decision-making and greater transparency.

In this article we show that in relation to social ratings, leadership effects are just as important, if not more so, than effects arising from gender board balance. Cross-sectional and time-series results reveal that female-leadership strongly supports corporate social performance. This is an important finding, especially in light of women's increasing access to corporate leadership positions in China (Lam et al., 2013). It also extends US evidence on gender diversity and CSR-engagement (Bear et al., 2010; Hafsi and Turgut, 2013; Huang, 2013; and Harjoto et al., 2015) to the specific consideration of leadership effects and to an important and very different market context.

The present study's second major contribution is its assessment of the impact of foreign ownership on social ratings. Foreign investor influence, as with female participation in top-management in China, has risen significantly in recent years. In general terms, there is a significant positive association between CSR rating and foreign equity ownership levels. We also examine foreign investor influence more specifically by scrutinizing (1) qualified foreign institutional investor (QFII) presence in Chinese A-shareholdings and (2) offshore cross-listings. Associations between the two foreign investor dummies and social performance appear weak for the whole sample.

In relation to QFIIs, we consider a political bridge-building conception for their investment holdings (Du and Girma, 2010; Liu et al., 2014a; Lin et al., 2015; and Jiang and Kim, 2015). In this account, foreign parties' prime motivation for investment in state-controlled firms is to procure regulatory and business advantage with government agencies. In non-SOEs, where state presence is less conspicuous, the target's firm-specific attributes possibly take-on greater importance. In such a context, foreign parties are likely to focus more on a target firm's social and financial attributes. In SOEs, such concerns may be subordinate to the labyrinth of political benefits on offer from affiliation with state-controllers. Our results, in respect of both foreign investor measures, i.e., QFII presence and offshore cross-listing status, offer only limited support for such an account.

We also examine firms' broader ownership characteristics in relation to their CSR ratings. First, state ownership displays a non-linear association with ratings; with negative associations at lower state equity levels being displaced by positive effects at higher ownership levels. In terms of managerial ownership, we observe a positive relation in general terms. However, and as suggested in Barnea and Rubin (2010), CSR ratings invert at high managerial ownership levels. Barnea and Rubin (2010) argue that managers use firm-level CSR expenditure to build social standing. However, the incentive to do so wanes as insider stakes rise, due to the drag-effect of increased CSR expenditure on share valuations. Empirical findings elsewhere resound to a negative managerial ownership-CSR rating link (Barnea and

Rubin, 2010; Oh et al., 2011; and Soliman et al., 2012). Such an outcome is also more likely in firms subject to greater agency cost (Prior et al., 2008; Martinez-Ferrero and Garcia-Sanchez, 2015).

The present article also considers other important governance characteristics, including independent director participation and board duality. However, clear connection with CSR performance proved elusive. These findings contrast with related evidence for the US and Europe (Harjoto and Jo, 2011; and Cuadrado-Ballesteros et al., 2015). The contrast likely reflects institutional differences. Above all, Yu and Zheng (2014) argue that weak legal safeguards in China facilitate easy "removal" of independent board officers by politically-connected executive officers. Their evidence shows that, despite major market reforms, internal governance mechanisms still function sub-optimally. Our evidence is congruent with such a view. More specifically, China's current institutional and legal environment affords independent directors a relatively weak voice in the promotion of corporate social-engagement.

Finally, CSR ratings exhibit significant positive association with a firm's total assets, age and size; but a negative one with leverage. We also identify an inverse association between social ratings and lagged financial performance. This last finding reaffirms and extends earlier evidence (Rutledge et al., 2014; and Farag et al., 2015) on the financial-social performance nexus in China.

Table 1a
Variable definitions

CSR	A firm's Corporate Social Responsibility reporting rating score
CSRD	Dummy variable for firms with CSR reporting
FCEO	Dummy =1 where a firm's CEO and/or vice CEO is female (=0 otherwise)
FChair	Dummy =1 where a board's Chair and/or vice Chair is female (=0 otherwise)
Duality	Dummy =1 where CEO and board chair are the same person (=0 otherwise)
FD	Percentage of female directors
ID	Percentage of independent directors
Board Size	Board size measured as natural logarithm of total number of directors (ND)
Managerial Size	Managerial size measured as the natural logarithm of the total number of executive managers (NM)
Managerial Ownership	Percentage of outstanding shares in managerial ownership
State Ownership	Percentage of state ownership
SOE	Dummy variable for state-owned enterprises (1 for SOEs and 0 for Non-SOEs)
H10	Herfindahl index for ownership by top-10 shareholders
Qfiid	Dummy variable for firms with Qualified Foreign Institutional Investors (QFIIs)
Overseas	Dummy variable for overseas listing
AGE	Listing age of firm
LEV	Leverage ratio (= total debts scaled by total assets)
ROE	Return on equity
Firm Size	Firm size measured as the natural logarithm of total assets (TA)
SHSE	Dummy variable for firms listed on the Shanghai Stock Exchange (SHSE)

Table 1b
Descriptive statistics

Variable	Obs	Mean	Median	Std.	Min	Max
CSR_t	2412	35.46	32.00	13.05	11.69	84.02
$CSRD_t$	8102	0.30	0.00	0.46	0.00	1.00
$FCEO_{t-1}$	8102	0.32	0.00	0.47	0.00	1.00
$FChair_{t-1}$	8102	0.09	0.00	0.28	0.00	1.00
FD_{t-1}	8102	11.23	11.00	10.99	0.00	71.00
ID_{t-1}	8102	35.61	33.00	6.59	0.00	80.00
$Duality_{t-1}$	8102	0.33	0.00	0.47	0.00	1.00
Board Size$(ND)_{t-1}$	8102	10.05	9.00	2.59	4.00	26.00
Managerial Size$(NM)_{t-1}$	8102	6.82	6.00	3.28	1.00	45.00
Managerial $Ownership_{t-1}$	8102	3.54	0.00	13.30	0.00	100.00
State $Ownership_{t-1}$	8102	20.44	6.40	23.91	0.00	100.00
SOE_{t-1}	8102	0.43	0.00	0.49	0.00	1.00
$H10_{t-1}$	8102	0.17	0.13	0.13	0.00	0.80
$Qfiid_{t-1}$	8102	0.09	0.00	0.28	0.00	1.00
ROE_{t-1}	8102	0.09	0.09	0.77	-11.27	33.83
Age_t	8102	11.35	12.00	4.97	1.00	23.00
LEV_t	8102	0.52	0.52	0.22	0.00	1.00
Firm Size$(TA)_t$	8102	49,452.66	2,714.46	576,727.5	.05	17,500,000
$SHSE_t$	8102	0.53	1.00	0.50	0.00	1.00
$OVERSEAS_t$	8102	0.04	0.00	0.20	0.00	1.00

Table 2a
Sample selection

	2009	2010	2011	2012	2013	2009-13
Initial observations	314	471	492	580	644	2,501
No. of observations with missing data	9	22	32	17	9	89
Final observations	305	449	460	563	635	2,412

Table 2b
Descriptive statistics for CSR reporting and non-reporting firms (CSRD=1 indicates CSR disclosure; CSRD=0 indicates non-disclosure)

CSRD is a dummy variable for firms with CSR reporting; FCEO is a dummy variable that equals 1 where a firm's CEO and/or vice CEO is female and 0 otherwise; FCEO is a dummy variable that equals 1 where a board's Chair and/or vice Chair is female and 0 otherwise; FD is the percentage of female directors; ID is the percentage of independent directors; Duality is a dummy variable for firms with duality of CEO and board chair (1=if CEO and Chair are the same person; 0 if not); Board Size (ND) is the total number of board directors. Management Size (NM) is the total number of executive managers; Managerial Ownership is the percentage of managerial ownership; State Ownership is the percentage of state ownership; SOE is a dummy variable for SOEs (1 for SOEs and 0 for Non-SOEs); H10 is the Herfindahl Index for ownership by top-10 shareholders; Qfiid is a dummy variable for firms receiving QFII investment; ROE is the return on equity; AGE is a firm's listing age; LEV is the leverage ratio; Firm Size (TA) is a firm's total assets; SHSE is a dummy for firms with Shanghai Stock Exchange listing; and OVERSEAS is a dummy for overseas listing.

	CSRD=1						CSRD=0						*t* test for diff.
Variable	Obs	Mean	Median	Std.	Min	Max	Obs	Mean	Median	Std.	Min	Max	in means
$FCEO_{t-1}$	2412	0.31	0.00	0.46	0.00	1.00	5690	0.33	0.00	0.47	0.00	1.00	-1.44
$FChair_{t-1}$	2412	0.06	0.00	0.24	0.00	1.00	5690	0.10	0.00	0.30	0.00	1.00	-5.87***
FD_{t-1}	2412	9.55	9.00	10.24	0.00	56.00	5690	11.94	11.00	11.22	0.00	71.00	-9.00***
ID_{t-1}	2412	36.08	33.00	6.87	8.00	75.00	5690	35.42	33.00	6.45	0.00	80.00	4.14***
$Duality_{t-1}$	2412	0.31	0.00	0.46	0.00	1.00	5690	0.34	0.00	0.48	0.00	1.00	-2.67***
Board Size $(ND)_{t-1}$	2412	10.63	10.00	2.85	5.00	26.00	5690	9.80	9.00	2.44	4.00	25.00	13.22***
Managerial Size $(NM)_{t-1}$	2412	8.14	7.00	3.82	2.00	28.00	5690	6.27	6.00	2.84	1.00	45.00	24.42***
Managerial $Ownership_{t-1}$	2412	1.98	0.00	9.05	0.00	100.00	5690	4.20	0.00	14.69	0.00	100	-6.86***
State $Ownership_{t-1}$	2412	26.76	25.99	25.98	0.00	100.00	5690	17.76	2.19	22.45	0.00	100	15.71***
SOE_{t-1}	2412	0.54	1.00	0.50	0.00	1.00	5690	0.38	0.00	0.48	0.00	1.00	11.40***
$H10_{t-1}$	2412	0.20	0.17	0.14	0.00	0.80	5690	0.16	0.12	0.12	0.00	0.75	13.79***
$Qfiid_{t-1}$	2412	0.13	0.00	0.33	0.00	1.00	5690	0.07	0.00	0.26	0.00	1.00	8.34***
ROE_{t-1}	2412	0.13	0.12	0.14	-1.16	3.58	5690	0.07	0.07	0.91	-11.27	33.83	3.39***
Age_t	2412	10.69	11.00	5.09	1.00	23.00	5690	11.63	12.00	4.89	1.00	23.00	-7.76***
LEV_t	2412	0.52	0.53	0.21	0.01	1.00	5690	0.52	0.52	0.22	0.00	1.00	-0.08
Firm Size (Rmb Millions,$TA)_t$	2412	154,722.9	7,343.49	1,048,806	85.66	17,500,000	5690	4,828.4	1,988.98	27,706.88	0.05	1,820,000	10.77***

$SHSE_t$	2412	0.62	1.00	0.49	0.00	1.00	5690	0.50	0.00	0.50	0.00	1.00	9.75***
$OVERSEAS_t$	2412	0.11	0.00	0.32	0.00	1.00	5690	0.01	0.00	0.10	0.00	1.00	22.52***

Note: *, **, and *** represent significance levels at 10%, 5%, and 1% for *t* test.

Table 3
CSR rating and its association with female board representation, leadership and foreign ownership

CSR is a firm's Corporate Social Responsibility reporting rating score.

FCEO is a dummy variable for female CEO or vice-CEO (1=female CEO or vice-CEO; and 0 if both are male); FChair is a dummy variable for female Chair or vice-Chair (1=female Chair or vice-Chair; and 0 if both are male); Duality is a dummy (1= if CEO and Chair are the same person; and 0 if not); FD is the percentage of female directors; ID is the percentage of independent directors; Board Size is measured as the natural logarithm of total number of directors; Managerial Size is measured as the natural logarithm of total number of executive managers; Managerial Ownership is the percentage of managerial ownership; State Ownership is the percentage of state ownership; SOE is a dummy variable (= 1 for an SOE and 0 for a Non-SOE); H10 is the Herfindahl index for ownership by top-10 shareholders; Qfiid is a dummy variable for firms with QFII investment; ROE is return on equity; AGE is the natural logarithm of a firm's listing age; LEV is leverage ratio; Firm Size is firm size measured as the natural logarithm of total assets; SHSE is a dummy for Shanghai Stock Exchange listing; and Overseas is a dummy for offshore H-share listing.

Panel Regressions	CSR Rating Score			
	Coef.	z test	Coef.	z test
Constant	-93.04***	-13.27	-93.35***	-13.29
$FCEO_{t-1}$	1.11**	2.37	1.62***	2.64
$FCEO_{t-1} \times FD_{t-1}$			-0.05	-1.26
$FChair_{t-1}$	1.83*	1.83	3.09*	1.65
$FChair_{t-1} \times FD_{t-1}$			-0.06	-0.77
FD_{t-1}	0.05**	2.13	0.08***	2.61
ID_{t-1}	0.04	1.55	0.04	1.51
$Duality_{t-1}$	-0.39	-0.87	-0.37	-0.83
Board $Size_{t-1}$	1.76*	1.94	1.69*	1.86
Managerial $Size_{t-1}$	3.63***	5.80	3.65***	5.83
Managerial $Ownership_{t-1}$	0.03	0.88	0.03	0.88
SOE_{t-1}	-1.59***	-2.80	-1.58***	-2.79
$H10_{t-1}$	-2.90	-1.20	-2.86	-1.19
$Qfiid_{t-1}$	-0.75*	-1.70	-0.76*	-1.71
ROE_{t-1}	-2.81***	-2.63	-2.84***	-2.66
AGE_t	3.58***	6.24	3.60***	6.27
LEV_t	-6.57***	-4.08	-6.57***	-4.08
Firm $Size_t$	4.92***	17.01	4.93***	17.03
$SHSE_t$	-1.75**	-2.03	-1.79**	-2.08
$Overseas_t$	-0.32	-0.27	-0.35	-0.30
Industries	Controlled		Controlled	
Number of obs	2412		2412	
Number of groups	682		682	
Wald Chi^2	832.13***		834.67***	
R^2 within	24.61%		24.77%	
R^2 between	31.48%		31.48%	
R^2 overall	35.70%		35.68%	

Note: *, **, and *** represent significance levels at 10%, 5%, and 1% for z and Chi tests, respectively.

Table 4
Gender board diversity (FD), foreign ownership (Qfiid & Overseas) and firms' CSR ratings

CSR is a firm's Corporate Social Responsibility reporting rating score.

FD is the percentage of female directors; ID is the percentage of independent directors; Duality is a dummy variable (1=if CEO and Chair are the same person; and 0 if not); Board Size measured as the natural logarithm of total number of directors; Managerial Size measured as the natural logarithm of total number of executive managers; Managerial Ownership is the percentage of managerial ownership; State Ownership is the percentage of state ownership; SOE is a dummy variable (=1 for an SOE; and 0 for a Non-SOE); H10 is the Herfindahl index for ownership by top-10 Shareholders; Qfiid is a dummy variable for firms with QFII investment; ROE is return on equity; AGE is the natural logarithm of a firm's listing age; LEV is leverage ratio; Firm Size is measured as the natural logarithm of total assets; SHSE is a dummy variable for firms listed on Shanghai Stock Exchange; and Overseas is a dummy for offshore H-share listing.

Panel Regressions	CSR Rating Score			
	Coef.	z test	Coef.	z test
Constant	-95.16***	-13.40	-93.86***	-13.20
FD_{t-1}	0.07***	2.84	0.07***	2.87
ID_{t-1}	0.05	1.44	0.04	1.03
$Duality_{t-1}$	-0.36	-0.80	-0.31	-0.69
Board $Size_{t-1}$	1.79**	1.99	1.73**	1.92
Managerial $Size_{t-1}$	3.86***	6.26	3.85***	6.23
Managerial $Ownership_{t-1}$	0.02	0.78	0.03	0.82
State $Ownership_{t-1}$	-0.04	-1.03		
ID_{t-1}×State $Ownership_{t-1}$	0.00	-0.35		
SOE_{t-1}			-1.95	-1.10
ID_{t-1}×SOE_{t-1}			0.01	0.20
$H10_{t-1}$	-0.80	-0.32	-2.83	-1.17
$Qfiid_{t-1}$	-0.75*	-1.69	-0.73*	-1.63
ROE_{t-1}	-2.81***	-2.63	-2.80***	-2.62
AGE_t	3.54***	6.15	3.67***	6.38
LEV_t	-6.48***	-4.02	-6.60***	-4.09
Firm $Size_t$	4.96***	17.13	4.93***	17.00
$SHSE_t$	-1.51*	-1.75	-1.82**	-2.11
$Overseas_t$	-0.48	-0.41	-0.30	-0.25
Industries	Controlled		Controlled	
Number of obs	2412		2412	
Number of groups	682		682	
Wald Chi^2	829.51***		819.54***	
R^2 within	24.70%		24.57%	
R^2 between	31.18%		31.02%	
R^2 overall	35.48%		35.27%	

Note: *, **, and *** represent respective significance levels of 10%, 5%, and 1% for z and Chi tests, respectively.

Table 5
Nonlinearity in board diversity and ownership

CSR is a firm's Corporate Social Responsibility reporting rating score.

FCEO is a dummy variable for female CEO or vice-CEO (1=female CEO or vice-CEO; and 0 if both are male); FChair is a dummy variable for female Chair or vice-Chair (1=female Chair or vice-Chair; and 0 if both are male); Duality is a dummy variable (= 1 if CEO and Chair are the same person; and 0 if not); FD is the percentage of female directors; ID is the percentage of independent directors; Board Size measured as the natural logarithm of total number of directors; Managerial Size measured as the natural logarithm of total number of executive managers; Managerial Ownership is the percentage of managerial ownership; State Ownership is the percentage of state ownership; SOE is a dummy variable (=1 for an SOE; and 0 for a Non-SOE); H10 is the Herfindahl index for ownership by top-10 Shareholders; Qfiid is a dummy variable for firms with QFII investment; ROE is return on equity; AGE is the natural logarithm of a firm's listing age; LEV is leverage ratio; Firm Size is measured as the natural logarithm of total assets; SHSE is a dummy variable for firms listed on Shanghai Stock Exchange; and Overseas is a dummy for offshore H-share listing.

Panel Regressions	CSR Rating Score			
	Coef.	z test	Coef.	z test
Constant	-93.51***	-13.34	-93.15***	-13.28
$FCEO_t$	1.11**	2.36	1.12**	2.38
$FChair_t$	1.82*	1.83	1.83*	1.83
FD_{t-1}	0.10**	1.95	0.10*	2.01
FD_{t-1}^2	0.00	-1.08	0.00	-1.11
ID_{t-1}	0.04*	1.64	0.04*	1.65
$Duality_{t-1}$	-0.44	-0.98	-0.40	-0.88
Board $Size_{t-1}$	1.77**	1.95	1.69*	1.87
Managerial $Size_{t-1}$	3.70***	5.91	3.71***	5.91
Managerial $Ownership_{t-1}$	0.14*	1.92	0.15**	2.00
Managerial $Ownership_{t-1}^2$	-0.00*	-1.76	-0.00*	-1.80
State $Ownership_{t-1}$	-0.07***	-2.65		
State $Ownership_{t-1}^2$	0.00	1.10		
SOE_{t-1}			-1.55***	-2.74
$H10_{t-1}$	-1.03	-0.40	-2.45	-1.01
$Qfiid_{t-1}$	-0.73*	-1.63	-0.72*	-1.63
ROE_{t-1}	-2.82***	-2.65	-2.84***	-2.66
Age_t	3.59***	6.23	3.66***	6.36
LEV_t	-6.42***	-3.99	-6.51***	-4.04
Firm $Size_t$	4.91***	16.96	4.89***	16.89
$SHSE_t$	-1.30	-1.50	-1.68**	-1.95
$Overseas_t$	-0.37	-0.31	-0.29	-0.25
Industries	Controlled		Controlled	
Number of obs	2412		2412	
Number of groups	682		682	
Wald Chi^2	847.87***		837.05***	
R^2 within	24.99%		24.75%	
R^2 between	31.59%		31.51%	
R^2 overall	35.90%		35.80%	

Notes: *, **, and *** represent significance levels at 10%, 5%, and 1% for z and Chi tests, respectively.

Table 6a
SOEs versus non-SOEs

CSR is a firm's Corporate Social Responsibility reporting rating score; and SOE is a dummy variable (=1 for an SOE; and 0 for a Non-SOE).
FCEO is a dummy variable for female CEO or vice-CEO (1=female CEO or vice-CEO; and 0 if both are male); FChair is a dummy variable for female Chair or vice-Chair (1=female Chair or vice-Chair; and 0 if both are male); Duality is a dummy variable (= 1 if CEO and Chair are the same person; and 0 if not); FD is the percentage of female directors; ID is the percentage of independent directors; Board Size measured as the natural logarithm of total number of directors; Managerial Size measured as the natural logarithm of total number of executive managers; Managerial Ownership is the percentage of managerial ownership; H10 is the Herfindahl index for ownership by top-10 Shareholders; Foreign is the percentage of ownership hold by foreign shareholders including QFIIs, B shares, H shares and foreign legal person shares; Qfiid is a dummy variable for firms with QFII investment; ROE is return on equity; AGE is the natural logarithm of a firm's listing age; LEV is leverage ratio; Firm Size is measured as the natural logarithm of total assets; SHSE is a dummy variable for firms listed on Shanghai Stock Exchange; and Overseas is a dummy for offshore H-share listing.

Simultaneous OLS Regressions	SOEs		Non-SOEs		Chi test for diff. in Coef.	SOEs		Non-SOEs		Chi test for diff. in Coef.
	Coef.	*t* test	Coef.	*t* test		Coef.	*t* test	Coef.	*t* test	
Constant	-89.87***	-12.03	-55.49***	-7.94	11.77***	-88.51***	-11.97	-56.38***	-8.10	10.29***
$FCEO_t$	2.51***	3.30	3.00***	4.82	0.24	2.46***	3.30	3.05***	4.91	0.36
$FChair_t$	0.50	0.30	-0.05	-0.05	0.07	0.40	0.24	-0.01	-0.01	0.04
FD_{t-1}	0.12***	3.34	0.03	0.96	4.12**	0.12***	3.31	0.02	0.87	4.15**
ID_{t-1}	-0.00	-0.07	0.05	1.18	0.81	0.01	0.17	0.05	1.16	0.51
$Duality_{t-1}$	-0.73	-1.02	-0.64	-1.08	0.01	-0.61	-0.86	-0.66	-1.12	0.00
Board $Size_{t-1}$	5.19***	3.48	0.49	0.36	5.09**	4.74***	3.19	0.38	0.28	4.31**
Managerial $Size_{t-1}$	1.83**	2.18	3.74***	5.02	2.84*	1.78**	2.15	3.74***	5.02	3.02*
Managerial $Ownership_{t-1}$	0.71	0.83	0.16***	2.72	0.86	0.67	0.78	0.15***	2.64	0.75
Managerial $Ownership_{t-1}^2$	-0.04	-0.89	-0.00*	-1.64	1.38	-0.04	-0.87	0.00	-1.54	1.30
$H10_{t-1}$	2.43	0.90	4.06*	1.71	0.19	2.10	0.78	4.03*	1.69	0.27
$Qfiid_{t-1}$	-0.97	-1.09	0.92	1.03	1.80					
Foreign						0.17***	4.63	-0.01	-0.29	12.90***
ROE_{t-1}	1.12	0.57	-6.38***	-2.54	5.46**	1.42	0.72	-6.36**	-2.52	5.79**
AGE_t	0.68	0.94	-1.61***	-2.59	4.80**	0.31	0.43	-1.60**	-2.58	3.45*
LEV_t	-3.65*	-1.76	-10.24***	-5.46	6.30**	-4.17**	-2.03	-10.45***	-5.58	5.65**
Firm $Size_t$	4.23***	14.87	4.40***	13.39	0.14	4.25***	15.18	4.46***	13.70	0.18
$SHSE_t$	1.02	1.16	-2.08***	-3.41	9.22***	1.20	1.37	-2.05***	-3.37	10.29***
$Overseas_t$	0.87	0.94	2.33	1.20	0.18	-3.77**	-2.76	2.33	1.16	2.72*
Industries	Controlled		Controlled			Controlled		Controlled		
Number of obs	1297		1115		2412	1297		1115		2412
F test	32.39***		19.71***			33.54***		19.66***		
Adjusted R^2	43.66%		34.24%			44.55%		34.18%		

Note: *, **, and *** represent significance levels at 10%, 5%, and 1% for *t*, *F* and Chi tests, respectively.

Table 6b

Firms with state ownership (State Ownership>0) versus firms without state ownership (State Ownership=0)

CSR is a firm's Corporate Social Responsibility reporting rating score; and State Ownership is the percentage of state ownership.
FCEO is a dummy variable for female CEO or vice-CEO (1=female CEO or vice-CEO; and 0 if both are male); FChair is a dummy variable for female Chair or vice-Chair (1=female Chair or vice-Chair; and 0 if both are male); Duality is a dummy variable (= 1 if CEO and Chair are the same person; and 0 if not); FD is the percentage of female directors; ID is the percentage of independent directors; Board Size measured as the natural logarithm of total number of directors; Managerial Size measured as the natural logarithm of total number of executive managers; Managerial Ownership is the percentage of managerial ownership; H10 is the Herfindahl index for ownership by top-10 Shareholders; Foreign is the percentage of ownership hold by foreign shareholders including QFIIs, B shares, H shares and foreign legal person shares; Qfiid is a dummy variable for firms with QFII investment; ROE is return on equity; AGE is the natural logarithm of a firm's listing age; LEV is leverage ratio; Firm Size is measured as the natural logarithm of total assets; SHSE is a dummy variable for firms listed on Shanghai Stock Exchange; and Overseas is a dummy for offshore H-share listing.

Simultaneous OLS Regressions	State Ownership>0		State Ownership=0		Chi test for diff. in Coefficients	State Ownership>0		State Ownership=0		Chi test for diff. in Coefficients
	Coef.	*t* test	Coef.	*t* test		Coef.	*t* test	Coef.	*t* test	
Constant	-82.15***	-12.42	-56.61***	-7.04	5.61**	-77.67***	-12.02	-58.74***	-7.65	3.18*
$FCEO_t$	2.79***	4.23	2.85***	3.98	0.00	2.63***	4.04	2.95***	4.18	0.11
$FChair_t$	-0.29	-0.21	0.79	0.66	0.37	-0.28	-0.20	0.83	0.70	0.39
FD_{t-1}	0.10***	3.25	0.01	0.39	4.46**	0.10***	3.23	0.01	0.23	4.86**
ID_{t-1}	-0.01	-0.31	0.08*	1.66	2.36	-0.02	-0.37	0.08*	1.68	2.52
$Duality_{t-1}$	-0.39	-0.62	-0.72	-1.09	0.13	-0.40	-0.64	-0.72	-1.09	0.12
Board $Size_{t-1}$	4.27***	3.27	0.30	0.19	3.44*	3.96***	3.04	0.11	0.07	3.13*
Managerial $Size_{t-1}$	1.99***	2.65	4.55***	5.45	4.93**	2.08***	2.79	4.52***	5.42	4.47**
Managerial $Ownership_{t-1}$	-0.10	-0.55	0.20***	3.17	5.05**	-0.10	-0.54	0.19***	3.10	4.70**
Managerial $Ownership_{t-1}^2$	0.00	0.72	0.00*	-1.95	4.68**	0.00	0.70	-0.00*	-1.86	4.12**
$H10_{t-1}$	2.54	1.10	3.86	1.42	0.12	2.22	0.96	3.74	1.38	0.16
$Qfiid_{t-1}$	-0.92	-1.15	1.45	1.38	2.34					
$Foreign_{t-1}$						0.08***	3.66	0.00	0.08	3.89**
ROE_{t-1}	0.68	0.37	-6.87**	-2.30	4.10**	0.89	0.49	-7.04**	-2.36	4.66**
AGE_t	-0.33	-0.51	-0.40	-0.57	0.01	-0.38	-0.60	-0.40	-0.56	0.00
LEV_t	-5.02***	-2.70	-10.70***	-5.03	4.65**	-4.87***	-2.65	-10.89***	-5.11	5.18**
Firm $Size_t$	4.25***	16.64	4.22***	11.02	0.00	4.10***	16.90	4.35***	11.85	0.24
$SHSE_t$	0.39	0.55	-2.21***	-3.15	7.06***	0.36	0.51	-2.20***	-3.12	6.78***
Overseas	0.92	1.04	1.38	0.58	0.01					
Industries	Controlled		Controlled			Controlled		Controlled		
Number of obs	1540		872		2412	1540		872		2412
F test	38.31***		12.97***			40.22***		13.32***		
Adjusted R^2	43.69%		29.88%			44.13%		29.78%		

Note: *, **, and *** represent significance levels at 10%, 5%, and 1% for *t*, *F* and Chi tests, respectively.

Table7a
Interaction between foreign ownership and state ownership

CSR is a firm's Corporate Social Responsibility reporting rating score.

STDUM1 (=1 if STATE =0%; zero otherwise).
STDUM2 (=1 if 0% < STATE < 10%; zero otherwise).
STDUM3 (=1 if 10% ≤ STATE < 25%; zero otherwise).
STDUM4 (=1 if 25% ≤ STATE; zero otherwise).

FCEO is a dummy variable for female CEO or vice-CEO (1=female CEO or vice-CEO; and 0 if both are male); FChair is a dummy variable for female Chair or vice-Chair (1=female Chair or vice-Chair; and 0 if both are male); Duality is a dummy variable (= 1 if CEO and Chair are the same person; and 0 if not); FD is the percentage of female directors; ID is the percentage of independent directors; Board Size measured as the natural logarithm of total number of directors; Managerial Size measured as the natural logarithm of total number of executive managers; Managerial Ownership is the percentage of managerial ownership; State Ownership is the percentage of state ownership; SOE is a dummy variable (=1 for an SOE; and 0 for a Non-SOE); H10 is the Herfindahl index for ownership by top-10 Shareholders; Qfiid is a dummy variable for firms with QFII investment; ROE is return on equity; AGE is the natural logarithm of a firm's listing age; LEV is leverage ratio; Firm Size is measured as the natural logarithm of total assets; SHSE is a dummy variable for firms listed on Shanghai Stock Exchange; and Overseas is a dummy for offshore H-share listing.

Panel regressions results containing QFII*STDUM1, QFII*STDUM2 and QFII*STDUM4

Panel Regressions	CSR rating score			
	Coef.	z test	Coef.	z test
Constant	-93.90***	-13.41	-93.87***	-13.41
$FCEO_t$	1.07**	2.27	1.06**	2.26
$FChair_t$	1.86*	1.86	1.86*	1.86
FD_{t-1}	0.05**	2.23	0.05**	2.22
ID_{t-1}	0.04	1.46	0.04	1.44
$Duality_{t-1}$	-0.43	-0.96	-0.45	-1.00
$Board\ Size_{t-1}$	1.77**	1.96	1.77**	1.97
$Managerial\ Size_{t-1}$	3.67***	5.88	3.67***	5.87
$Managerial\ Ownership_{t-1}$	0.02	0.78	0.03	0.79
$State\ Ownership_{t-1}$	-0.04***	-3.75	-0.04***	-3.69
$H10_{t-1}$	-1.27	-0.51	-1.27	-0.51
$Qfiid_{t-1}$	-2.71*	-1.73	Dropped	
$Qfiid_{t-1}$×STDUM1	3.14*	1.84	0.51	0.66
$Qfiid_{t-1}$×STDUM2	-1.37	-0.63	-3.97**	-2.52
$Qfiid_{t-1}$×STDUM4	1.85	1.13	-0.80	-1.37
ROE_{t-1}	-2.82***	-2.65	-2.78***	-2.61
AGE_t	3.52***	6.12	3.52***	6.12
LEV_t	-6.45***	-4.01	-6.53***	-4.06
$Firm\ Size_t$	4.96***	17.16	4.96***	17.16
$SHSE_t$	-1.45*	-1.69	-1.46*	-1.71
$Overseas_t$	-0.45	-0.38	-0.44	-0.38
Industries	Controlled		Controlled	
Number of obs	2412		2412	
Number of groups	682		682	
Wald Chi^2	852.10***		848.63***	
R^2 within	25.18%		25.02%	
R^2 between	31.54%		31.61%	
R^2 overall	35.89%		35.99%	

Note: *, **, and *** represent significance levels at 10%, 5%, and 1% for z and Chi tests, respectively.

Table7b
Interaction between foreign ownership and state ownership

CSR is a firm's Corporate Social Responsibility reporting rating score; and SOE is a dummy variable (=1 for an SOE; and 0 for a Non-SOE).

STDUM1 (=1 if STATE =0%; zero otherwise).
ST5 (=1 if 0% < STATE ≤5%; zero otherwise).
ST10 (=1 if 5% < STATE ≤10%; zero otherwise).
ST30 (=1 if 10% < STATE ≤30%; zero otherwise).
ST100 (=1 if 30% < STATE; zero otherwise).

FCEO is a dummy variable for female CEO or vice-CEO (1=female CEO or vice-CEO; and 0 if both are male); FChair is a dummy variable for female Chair or vice-Chair (1=female Chair or vice-Chair; and 0 if both are male); Duality is a dummy variable (= 1 if CEO and Chair are the same person; and 0 if not); FD is the percentage of female directors; ID is the percentage of independent directors; Board Size measured as the natural logarithm of total number of directors; Managerial Size measured as the natural logarithm of total number of executive managers; Managerial Ownership is the percentage of managerial ownership; State Ownership is the percentage of state ownership; H10 is the Herfindahl index for ownership by top-10 Shareholders; Qfiid is a dummy variable for firms with QFII investment; ROE is return on equity; AGE is the natural logarithm of a firm's listing age; LEV is leverage ratio; Firm Size is measured as the natural logarithm of total assets; SHSE is a dummy variable for firms listed on Shanghai Stock Exchange; and Overseas is a dummy for offshore H-share listing.

Panel Regressions	CSR rating score			
	Coef.	z test	Coef.	z test
Constant	-93.87***	-13.40	-93.66***	-13.37
$FCEO_t$	1.05**	2.24	1.08**	2.31
$FChair_t$	1.88*	1.88	1.78*	1.78
FD_{t-1}	0.05**	2.25	0.05**	2.17
ID_{t-1}	0.04	1.48	0.04	1.54
$Duality_{t-1}$	-0.42	-0.95	-0.43	-0.95
Board $Size_{t-1}$	1.78**	1.97	1.81**	2.00
Managerial $Size_{t-1}$	3.67***	5.89	3.67***	5.87
Managerial $Ownership_{t-1}$	0.02	0.78	0.02	0.77
State $Ownership_{t-1}$	-0.05***	-3.79	-0.05***	-3.76
$H10_{t-1}$	-1.26	-0.51	-1.11	-0.45
$Qfiid_{t-1}$	-5.62***	-2.66	Dropped	
$Qfiid_{t-1}$×STDUM1	6.02***	2.74	0.54	0.70
$Qfiid_{t-1}$×ST10	3.46	1.09	-2.16	-0.91
$Qfiid_{t-1}$×ST30	2.96	1.20	-2.65**	-2.10
$Qfiid_{t-1}$×ST100	4.91**	2.23	-0.71	-1.19
ROE_{t-1}	-2.76***	-2.60	-2.83***	-2.65
AGE_t	3.52***	6.12	3.51***	6.10
LEV_t	-6.48***	-4.03	-6.42***	-3.99
Firm $Size_t$	4.95***	17.15	4.94***	17.09
$SHSE_t$	-1.46*	-1.70	-1.44*	-1.68
$Overseas_t$	-0.46	-0.39	-0.41	-0.35
Industries	Controlled		Controlled	
Number of obs	2412		2412	
Number of groups	682		682	
Wald Chi^2	854.41***		845.54***	
R^2 within	25.25%		24.99%	
R^2 between	31.55%		31.54%	
R^2 overall	35.90%		35.89%	

Note: *, **, and *** represent significance levels at 10%, 5%, and 1% for z and Chi tests, respectively.

Table 8
Female top-management appointments and subsequent changes to CSR ratings

$\Delta CSR_{t-1,t}$ is the percentage change in a firm's CSR rating between year t-1 and year t, i.e. $(CSR_t-CSR_{t-1})/CSR_{t-1}$;

Appointment is a dummy variable with value one if a female leader is appointed in year t-1; and zero if a male leader is appointed in year t-1. Appointment = 1 (n=110 cases) and Appointment = 0 (n=103 cases).

All other explanatory variables are expressed in Δ form. For example, $\Delta FD_{t-1,t}$ is the change in the percentage of female directors between year-ends t-1 and t. Changes in some variables such as Age, Overseas, SHSE and industry dummies are excluded because of the constant change in firms' listing age and there being no change in firm's cross-listed and/or exchange-listed status as well as industry categorization over any given two years. The remaining variables are as defined earlier. FD is the percentage of female directors; ID is the percentage of independent directors; Board Size measured as the natural logarithm of total number of directors; Managerial Size measured as the natural logarithm of total number of executive managers; Managerial Ownership is the percentage of managerial ownership; State Ownership is the percentage of state ownership; H10 is the Herfindahl index for ownership by top-10 shareholders; Qfiid is a dummy variable for firms with QFII investment; ROE is return on equity; AGE is the natural logarithm of a firm's listing age; LEV is leverage ratio; Firm Size is measured as the natural logarithm of total assets; SHSE is a dummy variable for firms listed on Shanghai Stock Exchange; and Overseas is a dummy for offshore H-share listing.

OLS Regression	$\Delta CSR_{t-1,t}$			
	Coef.	*t* test	Coef.	*t* test
Constant	0.01	0.42	0.00	0.06
$Appointment_{t-1}$	0.14***	4.37	0.15***	4.52
$Appointment_{t-1}\times\Delta ROE_{t-2,t-1}$			0.66**	2.25
$\Delta FD_{t-1,t}$	0.00	0.84	0.00	0.83
$\Delta ID_{t-1,t}$	0.00	-1.07	0.00	-1.13
$\Delta Duality_{t-1,t}$	-0.03	-0.53	-0.03	-0.51
$\Delta Board\ Size_{t-1,t}$	-0.10	-1.36	-0.11	-1.49
$\Delta Managerial\ Size_{t-1,t}$	0.01	0.89	0.01	0.99
$\Delta Managerial\ Ownership_{t-1,t}$	0.00	0.05	0.00	0.19
$\Delta State\ Ownership_{t-1,t}$	0.00	1.16	0.00	0.76
$\Delta H10_{t-1}$	-0.04	-0.09	-0.12	-0.28
$\Delta Qfiid_{t-1,t}$	0.30	0.30	0.30	0.29
$\Delta ROE_{t-2,t-1}$	0.23*	1.63	-0.15	-0.70
$\Delta ROE_{t-1,t}$	-0.05	-0.26	-0.09	-0.50
$\Delta LEV_{t-1,t}$	0.23	0.93	0.12	0.51
$\Delta Firm\ Size_{t-1,t}$	-0.04	-0.50	0.01	0.10
Number of obs	213		213	
F test	3.38***		2.87***	
Adjusted R^2	12.71%		11.70%	

Notes: *, **, and *** represent significance levels at 10%, 5%, and 1% for respective *t* and F tests.

Table 9
Heckman (1976, 1979) adjustment for endogeneity

Heckman (1976, 1979) offers a two-stage estimation remedy to adjust for a self-selection issue brought-on by endogeneity. The estimated coefficients in the first stage regression are used to compute an "Inverse Mills' Ratio". This Ratio features as a further independent variable in a second stage, where a least squares regression is performed (see Clougherty, Duso and Muck, 2016 for recent consider review and analysis of applications).

CSR is a firm's Corporate Social Responsibility reporting rating score.

FCEO is a dummy variable for female CEO or vice-CEO (1=female CEO or vice-CEO; and 0 if both are male); FChair is a dummy variable for female Chair or vice-Chair (1=female Chair or vice-Chair; and 0 if both are male); Duality is a dummy variable (= 1 if CEO and Chair are the same person; and 0 if not); FD is the percentage of female directors; ID is the percentage of independent directors; Board Size measured as the natural logarithm of total number of directors; Managerial Size measured as the natural logarithm of total number of executive managers; Managerial Ownership is the percentage of managerial ownership; State Ownership is the percentage of state ownership; SOE is a dummy variable (=1 for an SOE; and 0 for a Non-SOE); H10 is the Herfindahl index for ownership by top-10 Shareholders; Qfiid is a dummy variable for firms with QFII investment; ROE is return on equity; AGE is the natural logarithm of a firm's listing age; LEV is leverage ratio; Firm Size is measured as the natural logarithm of total assets; SHSE is a dummy variable for firms listed on Shanghai Stock Exchange; and Overseas is a dummy for offshore H-share listing.

Heckman two-stage OLS	CSR Rating Score	
	Coef.	z test
Step 1:		
Constant	44.30***	97.76
$FCEO_{t-1}$	2.17***	4.30
$FChair_{t-1}$	-0.37	-0.38
FD_{t-1}	0.06**	2.41
Step 2:		
Constant	-11.99***	-36.49
ID_{t-1}	0.01**	2.37
$Duality_{t-1}$	-0.05	-1.46
$Board\ Size_{t-1}$	0.03	0.45
$Managerial\ Size_{t-1}$	0.36***	9.52
$Managerial\ Ownership_{t-1}$	0.00	-1.02
$State\ Ownership_{t-1}$	0.00	-0.47
$H10_{t-1}$	-0.18	-1.37
$Qfiid_{t-1}$	0.05	1.11
ROE_{t-1}	0.04*	1.79
AGE_t	-0.17***	-5.36
LEV_t	-1.33***	-15.93
$Firm\ Size_t$	0.52***	34.77
$SHSE_t$	0.06*	1.90
$Overseas_t$	0.58***	6.42
Industries	Controlled	
No. of obs	8102	
Censored obs	5687	
Inverse-Mills Ratio (λ)	-11.75	
Wald Chi^2	31.28***	
ϱ	-0.81	
σ	14.56	

Notes: *, **, and *** represent significance levels at 10%, 5%, and 1% for respective z and Chi tests, respectively.

Appendix 1a

Descriptive statistics for SOEs versus non-SOEs

SOE is a dummy variable (= 1 for an SOE; and 0 for a non-SOE).
FCEO is a dummy variable for female CEO or vice-CEO (1=female CEO or vice-CEO; and 0 if both are male); FChair is a dummy variable for female Chair or vice-Chair (1=female Chair or vice-Chair; and 0 if both are male); FCEO1 is a dummy variable for female CEO (1=female CEO and 0 for a male CEO); FChair1 is a dummy variable for female Chair (1=female Chair; and 0 for a male CEO); FD is the percentage of female directors; ID is the percentage of independent directors; Duality is a dummy variable (= 1 if CEO and Chair are the same person; and 0 if not); Board Size measured as the natural logarithm of total number of directors; Managerial Size measured as the natural logarithm of total number of executive managers; Managerial Ownership is the percentage of managerial ownership; State Ownership is the percentage of state ownership; H10 is the Herfindahl index for ownership by top-10 Shareholders; Qfiid is a dummy variable for firms with QFII investment; ROE is return on equity; AGE is the natural logarithm of a firm's listing age; LEV is leverage ratio; Firm Size is measured as the natural logarithm of total assets; SHSE is a dummy variable for firms listed on Shanghai Stock Exchange; and Overseas is a dummy for offshore H-share listing.

	SOE=1						SOE=0						*t* test for differences in means
Variable	Obs	Mean	Median	Std.	Min	Max	Obs	Mean	Median	Std.	Min	Max	
$FCEO_{t-1}$	3448	0.27	0.00	0.44	0.00	1.00	4654	0.36	0.00	0.48	0.00	1.00	-9.06***
$FChair_{t-1}$	3448	0.04	0.00	0.19	0.00	1.00	4654	0.08	0.00	0.27	0.00	1.00	-7.79***
$FCEO1_{t-1}$	3448	0.06	0.00	0.24	0.00	1.00	4654	0.11	0.00	0.31	0.00	1.00	-7.19***
$FChair1_{t-1}$	3448	0.03	0.00	0.18	0.00	1.00	4654	0.05	0.00	0.22	0.00	1.00	-4.29***
FD_{t-1}	3448	9.45	9.00	9.74	0.00	56.00	4654	12.55	11.00	11.67	0.00	71.00	-12.65***
ID_{t-1}	3448	35.48	33.00	6.54	8.00	75.00	4654	35.71	33.00	6.61	0.00	80.00	-1.60
$Duality_{t-1}$	3448	0.26	0.00	0.44	0.00	1.00	4654	0.39	0.00	0.49	0.00	1.00	-12.64***
Board $Size_{t-1}$	3448	2.33	2.30	0.24	1.61	3.22	4654	2.24	2.20	0.24	1.39	3.26	17.29***
Managerial $Size_{t-1}$	3448	1.90	1.95	0.41	0.00	3.81	4654	1.77	1.79	0.45	0.00	3.33	13.30***
Managerial $Ownership_{t-1}$	3448	0.22	0.00	2.32	0.00	60.00	4654	6.00	0.00	17.03	0.00	100.00	-19.81***
State $Ownership_{t-1}$	3448	45.35	44.94	15.32	19.59	100.00	4654	1.99	0.00	4.62	0.00	19.89	180.00***
$H10_{t-1}$	3448	0.21	0.19	0.13	0.00	0.76	4654	0.14	0.10	0.12	0.00	0.80	27.61***
$Qfiid_{t-1}$	3448	0.10	0.00	0.31	0.00	1.00	4654	0.07	0.00	0.26	0.00	1.00	4.55***
ROE_{t-1}	3448	0.07	0.09	0.40	-9.91	5.73	4654	0.10	0.09	0.95	-11.27	33.83	1.32
Age_t	3448	11.48	12.00	4.57	1.00	23.00	4654	11.25	12.00	5.24	1.00	23.00	2.11***
LEV_t	3448	0.55	0.56	0.20	0.01	1.00	4654	0.50	0.50	0.22	0.00	1.00	9.65***
Firm $Size_t$	3448	22.40	22.08	1.67	13.08	30.49	4654	21.47	21.42	1.41	10.84	28.80	27.11***
$SHSE_t$	3448	0.77	1.00	0.42	0.00	1.00	4654	0.36	0.00	0.48	0.00	1.00	40.81***
$OVERSEAS_t$	3448	0.08	0.00	0.27	0.00	1.00	4654	0.01	0.00	0.10	0.00	1.00	16.00***

Note: *, **, and *** represent significance levels at 10%, 5%, and 1% for *t* test.

Appendix 1b
Correlation analysis

CSR is a firm's Corporate Social Responsibility reporting rating score.
FCEO is a dummy variable for female CEO or vice-CEO (1=female CEO or vice-CEO; and 0 if both are male); FChair is a dummy variable for female Chair or vice-Chair (1=female Chair or vice-Chair; and 0 if both are male); Duality is a dummy variable (= 1 if CEO and Chair are the same person; and 0 if not); FD is the percentage of female directors; ID is the percentage of independent directors; Board Size measured as the natural logarithm of total number of directors; Managerial Size measured as the natural logarithm of total number of executive managers; Managerial Ownership is the percentage of managerial ownership; H10 is the Herfindahl index for ownership by top-10 Shareholders; Foreign is the percentage of ownership hold by foreign shareholders including QFIIs, B shares, H shares and foreign legal person shares; Qfiid is a dummy variable for firms with QFII investment; ROE is return on equity; AGE is the natural logarithm of a firm's listing age; LEV is leverage ratio; Firm Size is measured as the natural logarithm of total assets; SHSE is a dummy variable for firms listed on Shanghai Stock Exchange; and Overseas is a dummy for offshore H-share listing.

	CSR	FCEO	FChair	FD	ID	Duality	BS	MS	MO	SO	SOE	H10	Qfiid	ROE	AGE	LEV	Firm Size	SHSE
FCEO	0.09																	
	(0.00)																	
FChair	0.00	0.14																
	(0.82)	(0.00)																
FD	0.00	0.22	0.30															
	(0.83)	(0.00)	(0.00)															
ID	0.02	0.00	-0.02	0.01														
	(0.26)	(0.95)	(0.09)	(0.36)														
Duality	0.02	0.05	0.07	0.08	0.01													
	(0.25)	(0.00)	(0.00)	(0.00)	(0.40)													
Board Size (BS)	0.29	0.01	-0.01	-0.07	-0.31	-0.03												
	(0.00)	(0.55)	(0.23)	(0.00)	(0.00)	(0.01)												
Managerial Size (MS)	0.26	0.14	-0.05	-0.07	0.00	0.03	0.20											
	(0.00)	(0.00)	(0.00)	(0.00)	(0.91)	(0.02)	(0.00)											
Managerial Ownership (MO)	-0.05	0.02	0.03	0.06	0.01	0.15	-0.09	-0.05										
	(0.02)	(0.15)	(0.00)	(0.00)	(0.44)	(0.00)	(0.00)	(0.00)										
State Ownership (SO)	0.17	-0.11	-0.08	-0.15	-0.01	-0.15	0.20	0.15	-0.21									
	(0.00)	(0.00)	(0.00)	(0.00)	(0.57)	(0.00)	(0.00)	(0.00)	(0.00)									
SOE	0.13	-0.10	-0.08	-0.14	-0.02	-0.14	0.19	0.15	-0.22	0.58								
	(0.00)	(0.00)	(0.00)	(0.00)	(0.11)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)								
H10	0.19	-0.08	-0.03	-0.10	0.04	-0.08	0.05	0.09	-0.07	0.46	0.29							
	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)							
Qfiid	0.06	0.03	0.01	-0.03	0.00	-0.01	0.04	0.05	-0.01	0.05	0.05	0.05						
	(0.01)	(0.01)	(0.60)	(0.00)	(0.85)	(0.33)	(0.00)	(0.00)	(0.30)	(0.00)	(0.00)	(0.00)						
ROE	0.10	0.00	0.00	0.00	0.02	0.00	0.01	0.04	0.01	-0.01	-0.01	0.02	0.02					
	(0.00)	(0.79)	(0.92)	(0.89)	(0.07)	(0.98)	(0.64)	(0.00)	(0.29)	(0.49)	(0.19)	(0.16)	(0.17)					
AGE	-0.10	0.01	0.00	0.04	0.00	-0.08	-0.03	-0.24	-0.32	-0.02	0.02	-0.17	-0.02	-0.01				
	(0.00)	(0.63)	(0.93)	(0.00)	(0.72)	(0.00)	(0.01)	(0.00)	(0.00)	(0.12)	(0.03)	(0.00)	(0.09)	(0.45)				
LEV	0.20	-0.02	-0.01	-0.02	0.00	-0.03	0.12	0.01	-0.13	0.09	0.11	0.00	-0.01	-0.03	0.18			
	(0.00)	(0.16)	(0.50)	(0.11)	(0.78)	(0.00)	(0.00)	(0.43)	(0.00)	(0.00)	(0.00)	(0.71)	(0.22)	(0.01)	(0.00)			
Firm Size	0.57	0.01	-0.05	-0.13	0.03	-0.06	0.32	0.35	-0.13	0.34	0.29	0.33	0.15	0.04	-0.02	0.29		
	(0.00)	(0.64)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.11)	(0.00)		
SHSE	0.05	-0.02	-0.01	-0.04	-0.03	-0.09	0.12	0.02	-0.19	0.40	0.41	0.06	0.04	-0.01	0.12	0.14	0.20	
	(0.01)	(0.03)	(0.52)	(0.00)	(0.00)	(0.00)	(0.00)	(0.11)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.58)	(0.00)	(0.00)	(0.00)	
Overseas	0.34	-0.01	-0.02	-0.06	0.03	0.00	0.16	0.14	-0.05	0.19	0.18	0.18	0.06	0.01	-0.09	0.09	0.40	0.13
	(0.00)	(0.44)	(0.03)	(0.00)	(0.01)	(0.77)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.31)	(0.00)	(0.00)	(0.00)	(0.00)

Note: *P* values are reported in parentheses.

Appendix 2

Female-led firm effects (FCEO1 and FChair1) across SOE and non-SOEs

CSR is a firm's Corporate Social Responsibility rating score.

FCEO1 is a dummy variable for female CEO (1=female CEO and 0 for a male CEO); FChair1 is a dummy variable for female Chair (1=female Chair; and 0 for a male CEO); FD is the percentage of female directors; ID is the percentage of independent directors; Duality is a dummy variable for the role duality of CEO and board chair (1=if CEO and Chair are the same person; 0 if not); Board Size measured as the natural logarithm of total number of directors; Managerial Size measured as the natural logarithm of total number of executive managers; Managerial Ownership is the percentage of managerial ownership; Managerial Ownership^2 is squared term of Managerial Ownership; SOE is a dummy variable (=1 for an SOE; and 0 for a Non-SOE); H10 is the Herfindahl index for ownership by top-10 shareholders; Qfiid is a dummy variable for firms with QFII investment; ROE is return on equity; AGE is the natural logarithm of a firm's listing age; LEV is leverage ratio; Firm Size is measured as the natural logarithm of total assets; SHSE is a dummy variable for firms listed on Shanghai Stock Exchange; and Overseas is a dummy for offshore H-share listing.

	CSR rating score				
Simultaneous OLS Regressions	SOEs		Non-SOEs		Chi test for differences in Coefficients
	Coef.	*t* test	Coef.	*t* test	
Constant	-89.93***	-13.49	-56.34***	-7.57	18.30***
$FCEO1_t$	1.04	0.53	0.90	0.73	0.00
$FChair1_t$	-2.58	-1.18	2.26	1.37	3.13*
FD_{t-1}	0.14***	3.72	0.04*	1.66	4.60**
ID_{t-1}	0.01	0.28	0.05	1.10	0.31
$Duality_{t-1}$	1.71	1.52	-0.59	-0.78	2.87*
Board $Size_{t-1}$	4.93***	3.33	0.13	0.09	5.26**
Managerial $Size_{t-1}$	2.05**	2.43	4.40***	5.71	4.23**
Managerial $Ownership_{t-1}$	0.63	1.08	0.15***	2.65	0.66
Managerial $Ownership_{t-1}^2$	-0.04	-1.11	0.00	-1.58	1.15
$H10_{t-1}$	2.52	0.91	3.16	1.21	0.03
$Qfiid_{t-1}$	-0.66	-0.71	1.27	1.25	1.95
ROE_{t-1}	1.18	0.58	-6.93***	-2.81	6.44**
AGE_t	0.63	0.78	-1.53**	-2.30	4.27**
LEV_t	-3.54*	-1.76	-10.76***	-6.20	7.35***
Firm $Size_t$	4.21***	14.72	4.44***	11.59	0.23
$SHSE_t$	1.13	1.44	-2.02***	-3.13	9.59***
$Overseas_t$	0.84	0.76	3.26	1.01	0.50
Industries	Controlled		Controlled		
Number of obs	1297		1115		2412
F test	31.95***		18.67***		
Adjusted R^2	43.32%		32.97%		

Note: *, **, and *** represent significance levels at 10%, 5%, and 1% for *t*, *F* and Chi tests, respectively.

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CSR performance in China: The role of board gender and foreign ownership

By Paul B. McGuinness, João Paulo Vieito & Mingzhu Wang

Highlights

- Gender diversity on boards promotes Chinese firms' social performance.
- The appointment of female officers to top-level management positions improves CSR ratings.
- Even higher ratings emerge in firms with gender diverse boards *and* female leaders.
- Social ratings are increasing in foreign ownership levels.
- QFII-invested SOEs and non-SOEs appear little different in terms of social rating.
- Ratings display negative (positive) relation with a firm's lagged financial performance and leverage (size and age).
- Ratings have little to no link with independent non-executive board director (INED) presence.